THE ARCHITECTURAL FORUM

DECEMBER

1923

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The
ARCHITECTURAL
FORUM

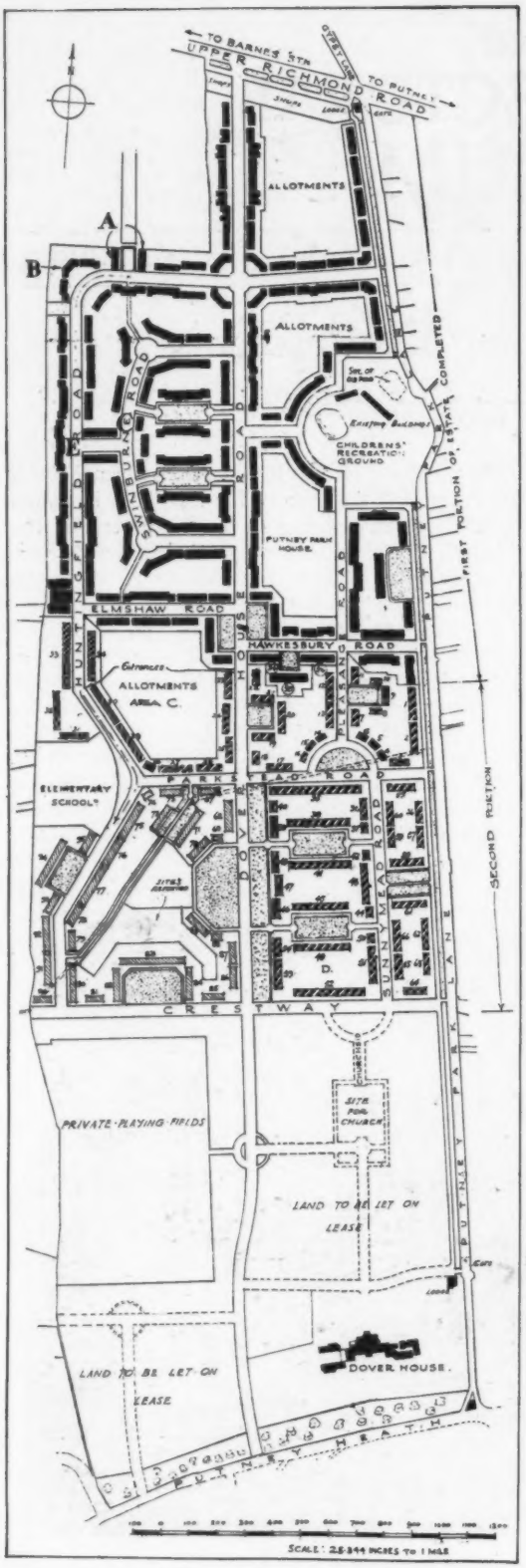
VOLUME XXXIX DECEMBER 1923 NUMBER 6

Some London Housing Developments

By H. J. BIRNSTINGL, A. R. I. B. A.
Late Assistant Architect, Ministry of Health

IT may be said that now in England we have definitely emerged from a period in which all considerations for town planning were for the time ignored. For it is a fallacy to think that town planning is a new activity. History reveals it as one of the very earliest of the arts and sciences, and the country is rich in evidence of careful forethought having been expended upon the development of many of its oldest towns. Notable periods of town planning activity occurred in the reign of Edward I in the twelfth century, and again the eighteenth century, which gave us the West End of London as we know it today. During the nineteenth century, however, the country was swept by the forces of the industrial revolution; old towns developed and new ones grew up in thoughtless haste. Today we are paying the penalty for this, both in national health and national wealth, but the pursuit of town planning has once more emerged from its obscurity. A study of it leads to the conclusion that no one aspect of the town can be considered by itself, but that all urban problems are intimately connected with one another. As Professor Abercrombie, one of England's foremost town planning experts, has somewhere pointed out, mistakes in the past have often occurred through the isolation and concentration on one particular aspect of the matter. It may be a concentration of subject or locality; thus the question of housing may be considered independently of its relation to such matters as traffic or

Cottage Close, Huntingfield Road, Roehampton Estate (A on Plan)
G. Topham Forrest, Architect

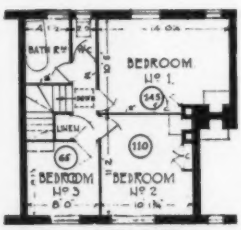


General Plan of Roehampton Estate

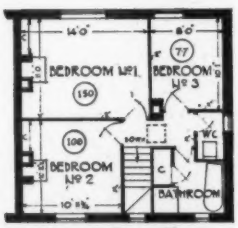
open spaces, or a small area may be considered independently of its relation to the surrounding area. Both these methods lead ultimately to disaster, and this is one of the most important doctrines which the modern town planning movement has brought to acceptance.

The question of housing in London is particularly complicated. There is not only the necessity of providing enormous additional accommodation, but there is also the equally urgent necessity of dealing with unhealthy and overcrowded areas. And here again, whereas in many other towns when it is not possible to re-house the whole population of an unhealthy area on the same site owing to overcrowding, it is often possible to house the surplus population on the outskirts of the town where land may be available; in London this cannot be done, since many classes of workers, such as dock laborers, market porters, and the like, must be moderately near their work. The outskirts of most towns are within walking distances of their centers, but in London this distance may well be eight miles. Thus, although this article deals mainly with two housing schemes of the London County Council, it must be borne in mind that these schemes form part of a vastly complex whole, nothing less indeed than the future development, in all its manifold aspects, of London.

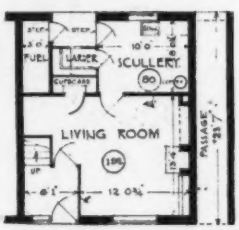
The housing program of the London County Council was formulated in June, 1919, seven months after the armistice, and it included the provision, within five years from January, 1920, of 29,000 new dwellings, exclusive of those to be erected on the cleared sites of unsanitary areas. This in itself, at five persons per house, is sufficient to accommodate a good-sized town's inhabitants. The estimated capital expenditure to be incurred in the acquisition



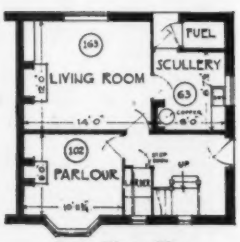
Second Floor Plan



Second Floor Plan



First Floor Plan
Four-Room House
S. or E. or W. Aspects
Area: 399 Feet



First Floor Plan
Five-Room House
N. or E. or W. Aspects
Area: 475 Feet

Typical Houses in Roehampton Estate

Group Houses in Bend of Huntingfield Road, Roehampton Estate (B on Plan)
G. Topham Forrest, Architect

of the sites, their layout and the erection thereon of the cottages, was approximately £24,000,000. About 2,000 of the houses were to be erected on partially developed sites, the remainder on the new estates at Roehampton, Bellingham and Becontree. Before the work could be begun it was necessary to make adequate arrangements for dealing with the difficulties arising through shortages of labor and materials. It was estimated, for example, that 700,000,000 bricks would be required in the course of the five years, and 300,000 tons of cement. The total average daily requirement of material was 4,000 tons. These are big figures and may convey some idea of the magnitude of the task. Yet despite all these and other difficulties the first of the new post-war houses were finished on February 7, 1920,

View Looking North on Swinburne Road, Roehampton Estate (C on Plan)
G. Topham Forrest, Architect

Cottages on Huntingfield Road, Roehampton Estate (E on Plan)
G. Topham Forrest, Architect

and since that date, up to the beginning of this year, dwellings have been completed at an average rate of seven per working day.

The Bellingham Estate has 2,090 dwellings and is one of the largest state-aided housing schemes in the country approved by the Minister of Health under the Housing and Town Planning, etc., Act, 1919. The area comprises 252 acres, and it was purchased by the council at a cost of about £200 per acre. The actual housing site consists of 176.5 acres, the remainder of the land being utilized for market gardens, and for houses not of the working class type.

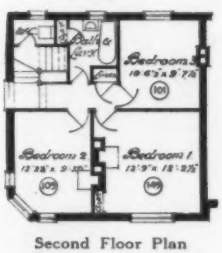
Modern ideas as to the requirements of a housing estate have undergone a change during the last few years, and it is now realized that it is the duty of the housing authority to provide not only houses but facilities for various amenities and activities. Of the 176.5 acres, therefore, only 107 are actually taken up by cottage building sites and minor open spaces, the remainder being devoted, in addition to roads, to allotment gardens, tennis courts, open spaces, school, church and shop and public building sites. Provision is made for 220 allotments, 26 tennis courts, and two schools, each for 1,024 pupils.

The housing site is triangular in shape, the layout being logically concentrated on a central green around which are grouped the most important public buildings. The accommodations vary from two-roomed flats to five-roomed houses; all are provided with bathrooms and hot water systems. The houses are constructed with 11-inch external cavity walls, internal walls of coke-breeze (cinder) concrete, wood floors and roofs covered with Welsh slates, English tiles, and French interlocking tiles.

The Roehampton Estate is perhaps one of the most charming in the country. It is very much smaller than the Bellingham Estate, and as yet only the first section has been finished, although work on the second has now been begun. Despite the variety in treatment there is a sense of unity in the scheme and a welcome suggestion of openness. The estate is 147 acres in extent, of which 94 have been reserved as a housing area, including also sites for schools, shops, and open spaces for public uses.

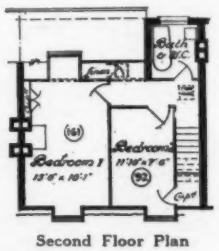
The first portion of the estate, which has now been developed, comprises 624 cottages and "maisonettes," the cottages having from three to five rooms and the "maisonettes" two and three rooms. The first school, which will ultimately accommodate 996 boys and girls, is in course of erection. This is an elementary school. There will eventually be a secondary school for which a site of five acres is reserved.

The Roehampton Estate contains many fine old trees, and the layout has been arranged so as to take the fullest advan-

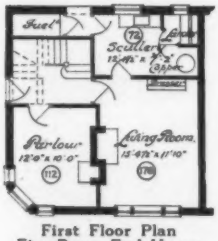


Second Floor Plan

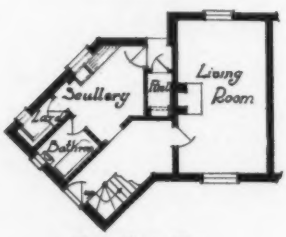
Second Floor Plan



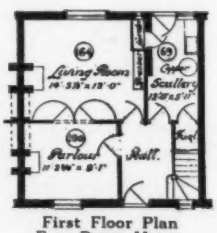
Second Floor Plan



First Floor Plan
Five-Room End House
South Aspect
Area: 505 Feet



First Floor Plan
Four-Room End House
Area: 444 Feet



First Floor Plan
Four-Room House
North Aspect
Area: 445 Feet

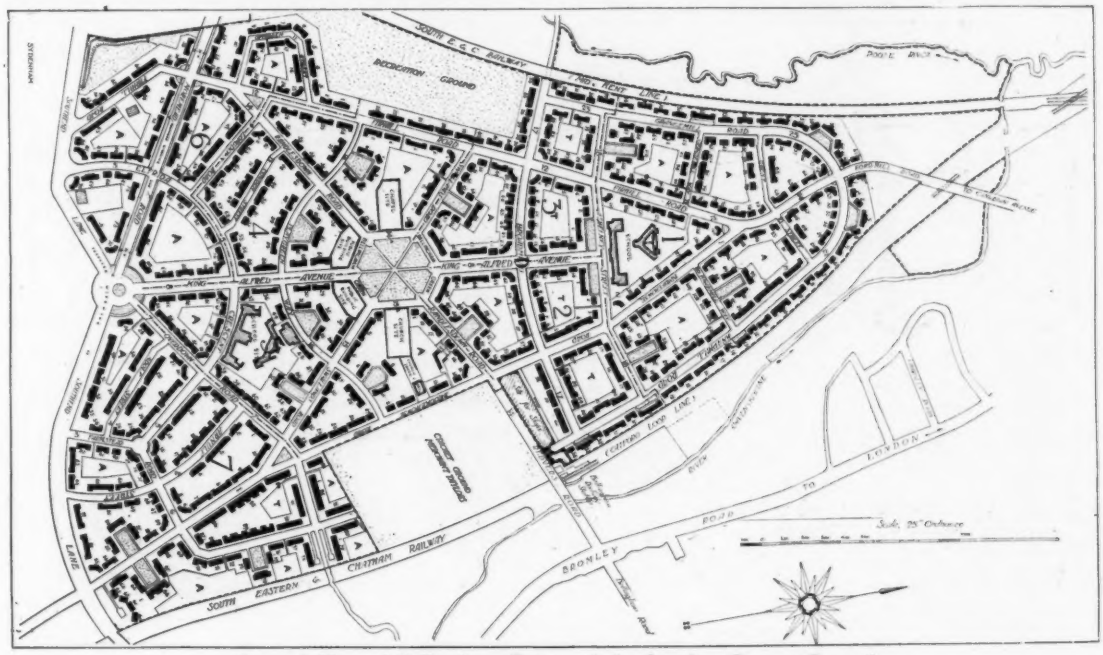
Typical Houses in Bellingham Estate

View East on Broadmead, Bellingham Estate (D on Plan)
G. Topham Forrest, Architect

tage of these and other natural features. The roads are laid out in accordance with modern ideas, rather than on the old system which insisted upon a 40-foot road irrespective of whether such width was actually required or not. Although a distance of at least 70 feet is maintained between houses, the carriage way itself is now designed in accordance with the amount of traffic it is likely to have to accommodate. This gives opportunity for variety in the grouping of the houses, and courts, closes, *cul-de-sacs,* and such arrangements become possible. Vistas are achieved and often closed by some modest architectural feature, such as a well designed doorway or gable or some especially designed building.

As for the houses themselves, they rely upon good proportions, good materials properly handled, care of detail, and thoughtful grouping. For the most part they are quite plain, the plan dictating the form, and economy ruling as it were throughout, but they are always good architecturally.

A few facts concerning the cost of these houses may be of interest, and these paragraphs are taken from the auditor's report of the Bellingham Estate. They suggest the economy exercised.



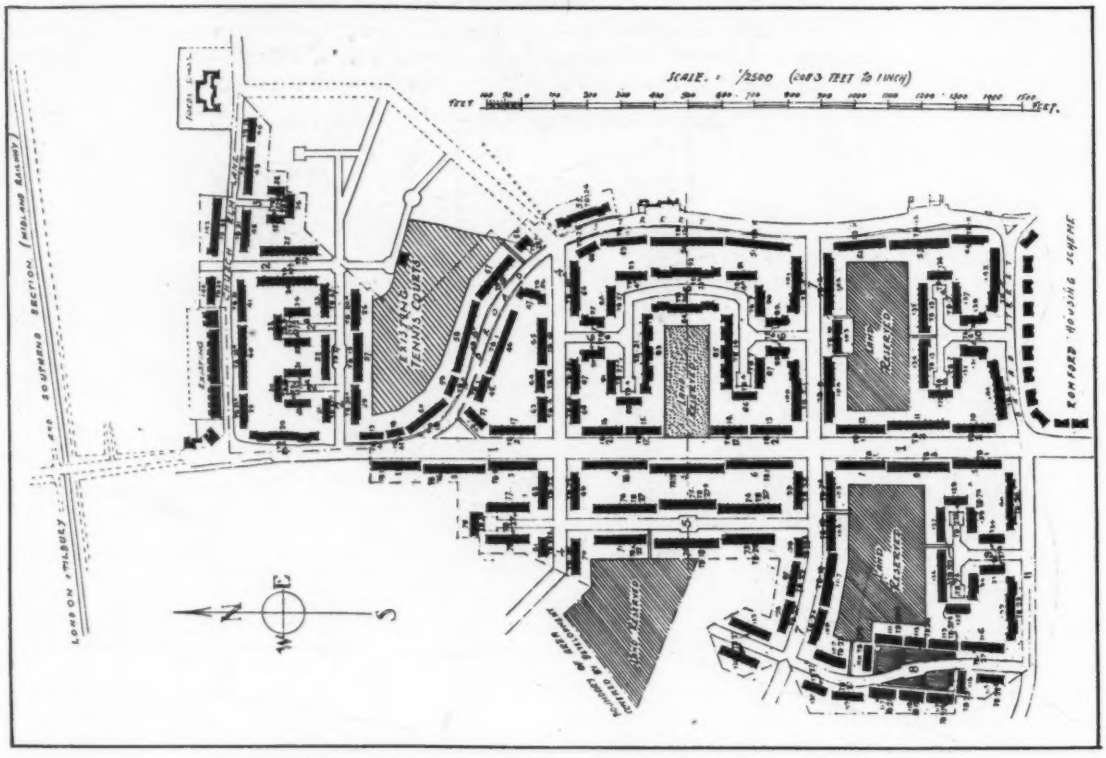
General Plan of Bellingham Estate of the London County Council
G. Topham Forrest, Architect

"The eventual cost of the dwellings is not readily ascertainable; the stocktakings and valuations have been carried out on the two anniversaries of the order to commence the undertaking (October 23, 1920), and these afford some basis for computation of the houses already erected; the approximate average cost per house may be taken at £900, excluding expenditure on purchase of site, construction of roads and sewers, and also establishment charges met through the central office.

"This figure must be taken as subject to revision when the contract is completed, and it should be noted that the cost of building has fallen since this figure was calculated and that houses are now being constructed at a lower cost than in the year under review."

The Roehampton Estate is more recent, consequently the cost is considerably reduced. Since 1920 there has been a steady fall in building costs, and the average cost of the 168 houses, comprising those of three and four rooms is £378, exclusive of roads and land.

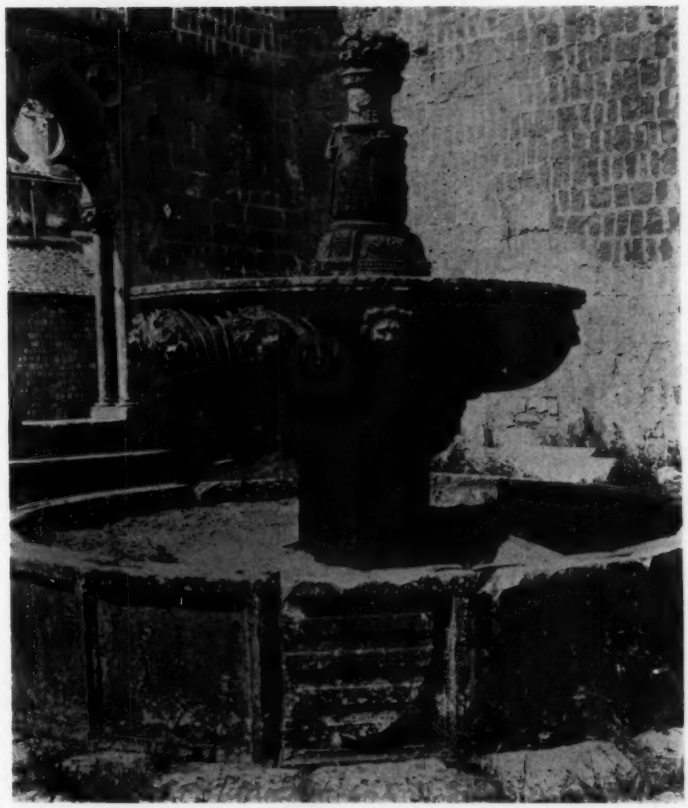
These and similar estates represent, indeed, the most significant contribution to architecture of the day. Here and there may arise a few individual buildings of outstanding merit, but in these estates is seen the determination of the mass of the people to live in healthier and more beautiful surroundings, and its recognition on the part of the government. Although from about 1910 serious attempts were made to improve housing conditions and to introduce a new and more comfortable type of home for the working classes, the war period marks the real dividing line between the old and the new order. It unquestionably redounds to the credit of municipalities and local authorities that they should have succeeded where private enterprise undoubtedly failed. For although, in the past, the number of houses may have been more adequate than it is today, the quality was certainly infinitely inferior. A contrast between the dismally monotonous districts which grew up at the end of the last and the beginning of this century, with their endless repetition of a single type of house, designed and placed without consideration of aspect, and where it was thought that all essential shortcomings were compensated for by the reckless application of utterly meretricious ornament, with one of these estates, with their comfortable and dignified houses will show the immensity of the advance. And in this matter, if London has not actually led the way she has marched with the van, and, moreover, her difficulties, as has been shown, are far more complex than those of any other city. Among those to whom praise is due none perhaps deserves it more than the Council's Architect, G. Topham Forrest, F.R.I.B.A., who is responsible, not only for these schemes, but also for all clearance and re-housing work.


SCALE. 1 /2500 (ONE INCH)
EXISTING TENNIS COURTS
LONDON & SOUTH WESTERN RAILWAY
EXISTING HOUSES
EXISTING HOUSES
EXISTING HOUSES

ITALIAN RENAISSANCE DETAILS

A SERIES OF MEASURED DRAWINGS

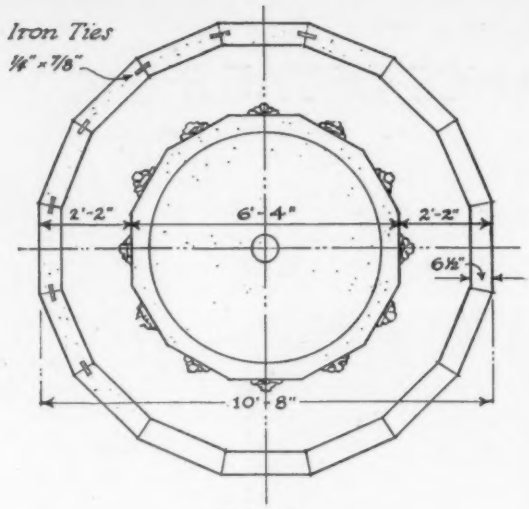
By HOWARD MOÏSE



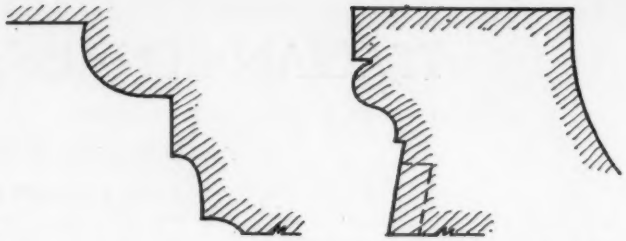
EARLY RENAISSANCE FOUNTAIN, PALAZZO DEI PAPI, VITERBO

IF closely analyzed, it will often be found that the excellence of Italian architecture is due in large measure to restraint in design, which provides simple ornament of fairly vigorous scale used in connection with plain but well textured surfaces to afford contrast.

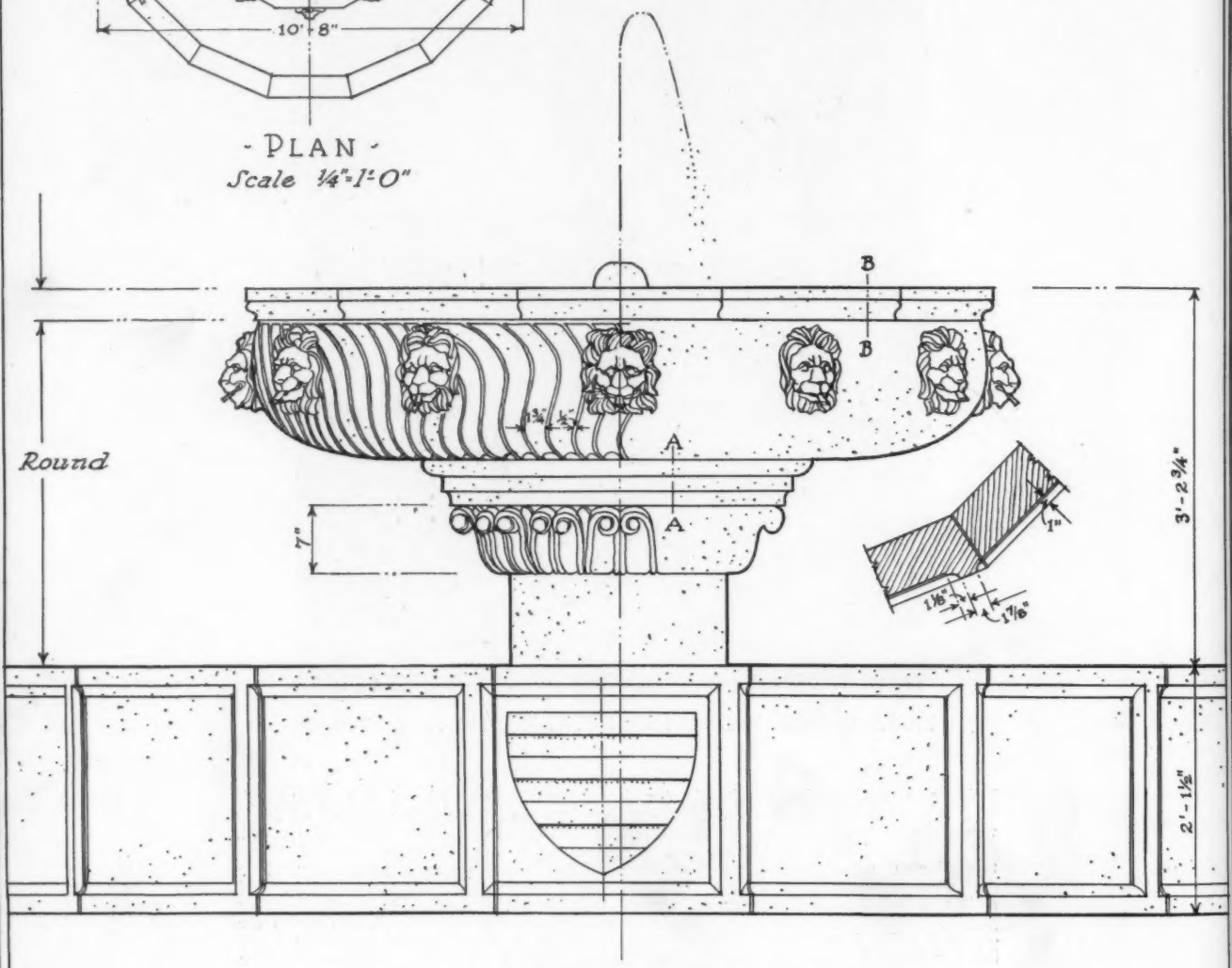
The success which follows such wise use of ornament may be judged from this fountain which stands in the courtyard of one of the old palaces at Viterbo, a town which still possesses many buildings of the early renaissance period. Like most of the old Italian fountains it consists of a basin which rests upon a pedestal, forming the fountain proper. This is surrounded by a larger basin, resting upon the ground, into which the overflow falls. The rim of the upper basin develops a 12-sided edge, while the lower basin is 16-sided, the angles thus formed adding a note of simplicity and strength which would have been wanting had the basins been circular. The ornament of the upper basin consists of a series of 12 lion masks and the simple capital of the supporting pedestal or shaft, while the sole ornament of the lower basin are the graceful proportions of the 16 panels of which it is formed.



- PLAN -
Scale 1/4"=1'-0"



- SECTION A-A - SECTION B-B -
Scale 3"=1'-0"



- ELEVATION -
Scale ¾"=1'-0"

ITALIAN DETAILS 1923	- MEDIEVAL FOVNTAIN - PALAZZO dei PAPI & VITERBO -	MEASVRED and DRAWN by HOWARD MOISE

· SILL ·
¼ Full Size

· ELEVATION ·
Scale ¾"-1'-0"

· SECTION · · JAMB ·
One Quarter Full Size

ITALIAN DETAILS 1923

· RENAISSANCE · WINDOW · · TOSCANELLA ·

MEASURED and DRAWN by HOWARD MOÏSE

ITALIAN RENAISSANCE DETAILS

A SERIES OF MEASURED DRAWINGS

By HOWARD MOÏSE

RENAISSANCE WINDOW, TOSCANELLA

DESIGNS of windows and doors while important in architecture of any type are particularly so with the Italian and Spanish styles, in which the use of ornament is largely concentrated about them, the wall areas being plain to afford contrast.

This window design is typical of the treatment of windows in Italy during the renaissance period. It possesses the usual pilasters which support an entablature, the whole resting upon the sill which is supported by two gracefully modeled corbels. While slightly more ornamented than such windows frequently are, the ornament is so well distributed that there is no crowding, and the decorated parts are everywhere given sufficient contrast by plain surfaces. Like many of the details being presented upon these pages this window design is well adapted for modern use, and since its ornament is wholly in low relief and without undercutting it could be easily reproduced in terra cotta or concrete.

ENGINEERING DEPARTMENT

Charles A. Whittemore, *Associate Editor*

The Medical Arts Building, Dallas

By W. J. KNIGHT, *Consulting Engineer*

THE structural frame of the Medical Arts Building is an unusual adaptation of reinforced concrete without the presence of structural steel in any form. The building located at the corner of Pacific avenue and Masten street, embodies many features of design and arrangement that are unique in the annals of building construction. The erection of the building was planned for the distinct purpose of bringing all the elements of the medical profession under one roof, in order to eliminate the objectionable discrimination which landlords of commercial office buildings are likely to exercise against doctors and dentists. The objection to the intimate association, during the hours of business activity, of healthy persons with those who are afflicted has occasioned a widespread determination on the part of the medical profession to assemble its members in buildings that are designed and equipped to supply individual needs and to render more efficient service.

The building, 19 stories high, besides possessing the distinction of being the tallest reinforced concrete building on record, is also of unprecedented size for the exclusive housing of members of the medical profession. The first floor is occupied by a spacious drug store and an establishment supplying medical and scientific instruments. A large concrete vault is located on the first floor for the convenience of tenants who desire to store their valuables. All dental offices in the building are located so as to receive north light, while the eye, ear, nose and throat specialists have been allotted space facing the west. The X-ray rooms are enclosed by partitions lined with lead or zinc alloys to prevent "strays" from penetrating to adjoining rooms with possible injury to occupants. Each office group has a reception room and individual treatment rooms for the use of doctors who are to practice in the suite. Compressed air, gas, electricity and water have been provided in offices and lavatories in conformity with the demands of each practitioner. Lunch rooms, a modern physicians' library, and an auditorium arranged specifically for doctors and dentists also serve to emphasize the attention given to insure perfect harmony in appointments, unexcelled comfort and the most competent service. Each of the upper floors above the third consists mainly of four suites, one occupying each wing of the building, with wide halls between, and all service parts in the center.

The exterior of the building is faced with cream colored impervious brick, smooth in texture and backed with 8 x 12 x 12 hollow tile. All ornamental detail of entrances, copings, pilaster cappings, sills, etc., consists of terra cotta and cast cement. The exterior bases and base pedestals are Tennessee marble with hone finish. A mansard roof, covered with green semi-glazed Spanish tile of variegated shades, crowns the building. The first three floors occupy the entire irregular shaped lot and above the third the floors assume the shape of a cross, 111 feet, 6 inches each way to give increased light and air, with window openings along the three faces of each wing. Each wing of the cross is 39 feet, 6 inches by 36 feet, 4½ inches, with a total height of 255 feet from basement floor to the top of mansard roof. In the planning of the four wings it was desired to avoid the use of any interior columns. This condition presented the solution of a problem in long span design that would contribute materially to the lateral stiffness of the structure while acting as a unit to resist the effects of high winds, so prevalent in this section of the country, as well as to function in the normal manner when sustaining the live and dead loads of the building.

The floor construction (Fig. 1) consisting of reinforced concrete ribs or joists 5 inches wide by 22 inches deep and 3 feet, 11 inches center to center, extending in two directions, was selected for all typical floors to fulfill the manifold requirements of the design. The top slab over joists is 2½ inches thick and reinforced with two layers of triangular mesh laid in two directions. The central joists at right angles to the axis of the squares on the typical floors, are reinforced with two 1-inch round rods, one straight with hooks at each end and the other bent up near the supports, and those parallel to the axis (See Section, Fig. II) are reinforced with two 1⅛-inch round rods anchored and bent similar to rods of the joists running at right angles to the axis of the squares. The rods in all non-continuous ends of slabs and beams were hooked to furnish additional rigidity to the structure, regardless of whether theoretical calculations for bond demanded their use. The squares or rectangles formed by the two-way joists were made identical for each consecutive floor to permit of repeated use of the wood form units, thus reducing construction costs.

The first floor, which consists of flat slab con-

Medical Arts Building, Dallas

Barglebaugh & Whitson, Architects
W. J. Knight & Co., Engineers

struction of unequal spans, is designed for a live load of 150 pounds per square foot, having for its supports additional auxiliary intermediate columns extending from the basement floor and terminating at the first floor level. The typical floors are designed for these superimposed and dead loads: partitions, 20 pounds; ceiling and plaster, 10 pounds; cement finish, 9 pounds; live load, 50 pounds; dead load of floor, 82 pounds; total, 171 pounds per square foot dead and live loads. The flat portion of mansard roof is designed for a live load of 30 pounds, plus the dead load. The sloping portion of mansard roof is designed for a live or wind load of 30 pounds, in addition to the dead load of slab and tile covering. Members supporting elevators and tanks are designed according to the service requirements placed upon them.

The reinforced concrete walls enclosing the four elevator shafts are 12 inches thick from the basement to twelfth floor inclusive, and 8 inches thick above the twelfth floor level. The reinforcement for these walls consists of multiple individual stayed column units about 16 inches by 10 inches, with longitudinal ⅝-inch round rods extending from the basement to sixth floor and ½-inch round longitudinal rods above the sixth (Fig. III.). The elevator walls were designed to serve as columns for the support of their respective loads from floors above, and also as stiffeners to aid in resisting the overturning action of high winds. The reinforcement of each wall face in each story was designed so as to permit the iron workers to do all assembling on the ground, and later to hoist the units into place. The stays at each corner of elevator enclosure walls

Typical Office Floor Plan

were secured in position after the individual wall units had been hoisted and wired in place to dowels extending above each floor.

The outside corner columns in the typical stories (Fig. IV) are designed to support the greatest dead, live and wind loads of any columns in the building. In the first story these columns are 56 inches by 56 inches, with reinforcement consisting of twenty-five 1⅛-inch round longitudinals and 9/16-inch round spirals with pitch 2 inches center to center and designed for a combined load of 2,580,000 pounds, of which 180,000 is due to direct stress from wind. Fortunately, the position of these columns, located as they are in the corners of each wing, did not preclude the use of sizes dictated by consistent design.

All foundation piers of columns (Fig. V) rest on hard, solid rock. After the foundation of each pier had been excavated and leveled off, borings were made at the center to a depth of 5 feet to make certain that solid rock existed at least to this depth without the presence of air pockets. The foundation piers are tapered on four sides from the first floor level to 1 foot below basement floor; and the areas of bases proportioned so that the assumption of 18 tons per square foot was satisfied and not exceeded in any instance. The distribution of loads from basement columns into the piers is accomplished by extending the basement column reinforcement, including spirals, into the piers and terminating them at a point where the sectional area of piers not reinforced resulted in giving a maximum compression of 500 pounds per square inch.

Some difficulty was encountered in the design of exterior columns where offsets in the upper stories were necessary to harmonize with the architectural exterior. Fig. VI on the next page shows typical examples of offsets in one of these columns, which at the fifteenth story supports a total load of 499,000 pounds. This load is transferred by means of vertical shear in the fourteenth story column to the column in the story beneath. This action is made obligatory by the lateral resistance offered by the fourteenth and fifteenth floors and the convergence of spandrels at this point, which prevent any bending in the fourteenth story due to eccentric load above. The fourteenth story column is 31 inches by 60 inches, embodying two cores, each being reinforced with ¼-inch round spirals, 2 inches pitch and 27 inches diameter. One core contains ten ⅝-inch round longitudinals and the other five ¾-inch and five ⅞-inch rounds. The two cores are tied together with ½-inch round stirrups placed in pairs to form bands 12 inches center to center.

The exterior face of these columns was assumed to be subjected

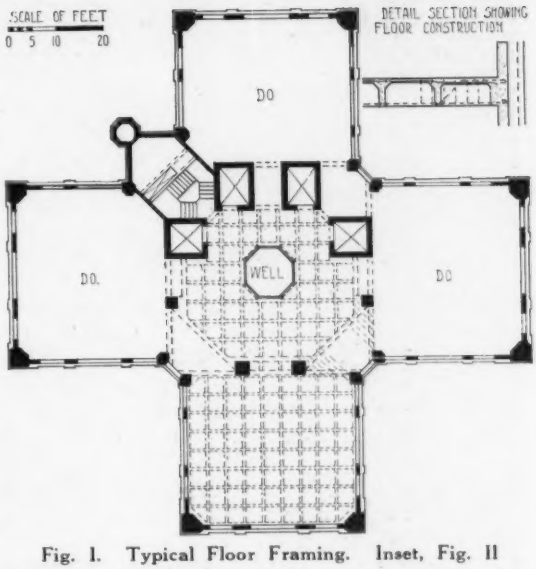


Fig. I. Typical Floor Framing. Inset, Fig. II

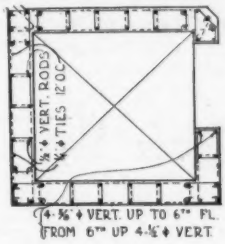


Fig. III. Detail Plan of Elevator Enclosure Above

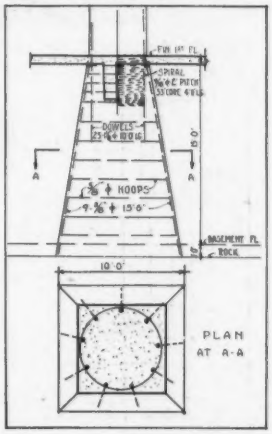


Fig. V. Detail of Column Footing at Right

Progress View of Typical Floor Showing Underside of Concrete Floor Construction

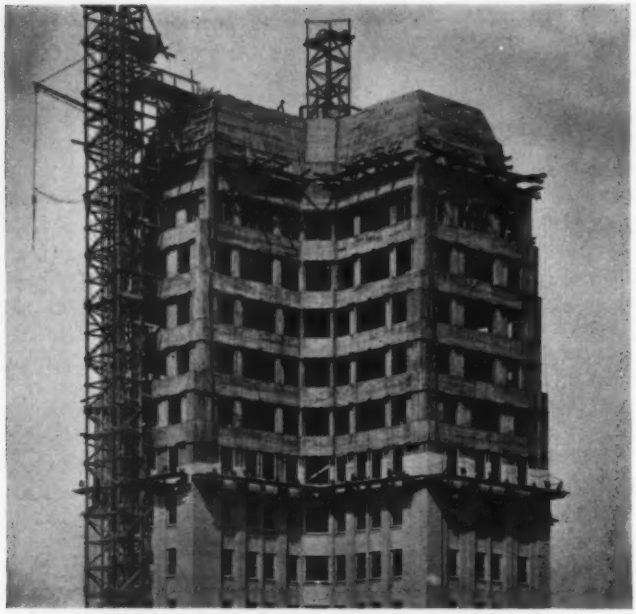


Fig. IV. Progress View Showing Relative Sizes of Corner and Intermediate Columns

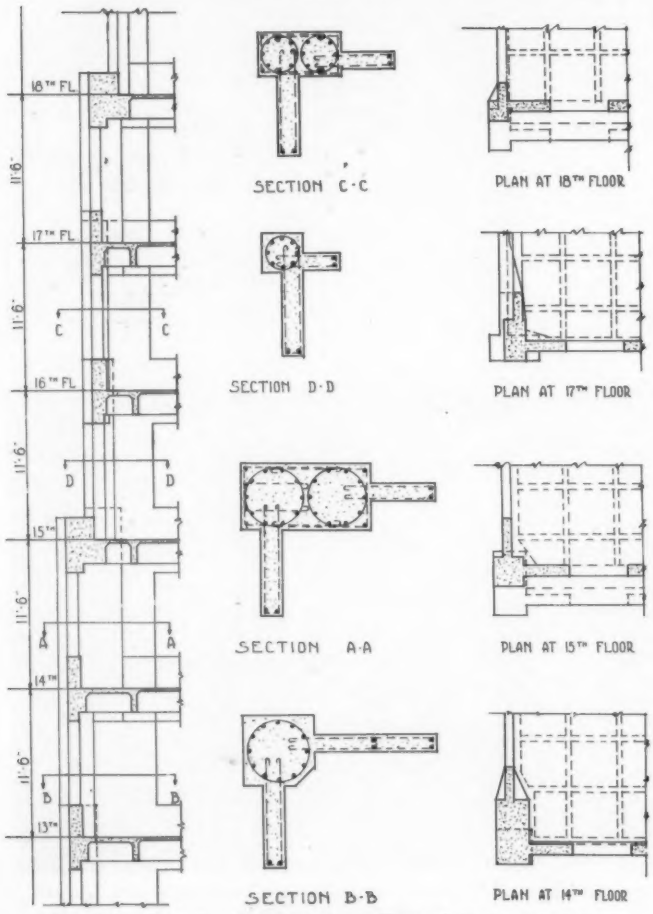


Fig. VI. Details of Offsets in a Typical Exterior Column

to tensile stress due to bending and, therefore, is reinforced with four 1-inch rounds hooked at the upper ends near horizontal face of offset. In the design of this offset a third precaution was exercised to insure absolutely a rigid section. The end of spandrel beam bearing in the column at fourteenth floor level is flared out at a point beginning 2 feet, 6⅜ inches from the face of column in fourteenth story, so that the sectional area would furnish sufficient area in shear to sustain a portion of the load from column in fourteenth story. The design of offsets required a great amount of study and theoretical, practical and common sense maneuvering before arriving at a solution that was considered applicable to such unusual conditions of design.

The spandrel beams throughout the building are unusual in size. Spandrels at the outer faces of wings are 12 by 60 inches (Fig. VII) and are designed for a maximum moment of 546,000 foot pounds or 6,552,000 inch pounds, being the combination of moments from the dead and live loads of floor, concentrated pier loads, and wind load. The maximum moment at the fifth floor produced by the wind at the column face is 330,000 foot pounds (Fig. VIII). This wind moment was assumed for all such spandrels of typical floors for the reason that as the wind moment lessens for each succeeding floor above, the column sizes also decrease in size, resulting in an increase in span length and consequently an increase of positive moment. The difference found in the combination of all moments, both negative and positive, was not sufficient to warrant any variation in the design.

Due to the narrow compression flanges of inverted spandrel beams, it was deemed necessary to use two intermediate struts 12 inches by 4 feet, 2 inches, extending continuously from the fourth floor to the attic floor. These struts together with stirrups serve as stiffeners to avoid any lateral movement of the compression flanges which have a width in proportion to clear span of 1/30.42 at the fourth floor and 1/35.6 at the attic floor.

All component parts of the structure were consistently designed for a wind pressure of 20 pounds per square foot without considering any deduction in the unit stresses in the concrete and steel resulting therefrom. An exact elastic analysis of stresses due to wind loading

of rigid frame buildings, being impossible in practice, approximate methods based on certain arbitrary assumptions are used. The four principal methods in current use, it may be said, are workable. Professor W. H. Burr in this connection is credited with the very plausible statement: "So long as the stresses found by one legitimate method of analysis are provided for, the stability of the structure is assured." This statement may be consoling to some engineers who persist in disregarding common sense applications in connection with the use of exhaustive theories.

The method known as the "cantilever method" was employed in the determination of all wind stresses in the building. It is somewhat comforting to the writer to know, in view of contradictory theories, that the wind stresses of the 36-story Equitable Building of New York were determined according to this method, and that the structure still stands.

The distance from floor to floor of all stories from the fourth to and including the eighteenth and attic is 11 feet, 6 inches. To describe more specifically the method applied, the fifth story of columns 7 and 8 (exterior corners) will be considered. The horizontal wind load of each story above and including the fifth is equal to 11.5 x 17.33 x 20= 4,000 pounds. At the attic the wind load is equal to 28.75 x 17.33 x 20=9,950 pounds.

The total moment from wind above the fifth floor about the line of inflection of the fifth story column is:

4,000 pounds x 971.75 ft.=3,887,000 foot pounds.
9,950 pounds x 155.25 ft.=1,544,738 foot pounds.
5,431,738 foot pounds

Assuming the average distance center to center between columns 7 and 8 as equal to 36 feet, we have the equation for direct stress in columns 7 and 8: (18X x 18)+(18X x 18)=5,431,738; X=8,380. The direct stress in fifth story column is: 18X=18 x 8,380, X=150,840 pounds.

The total horizontal shear in fifth story for columns 7 and 8 is the sum of the wind loads above, or 62,000 pounds. In the fourth story the total horizontal shear is 66,000 pounds. (Fig. IX). The shear taken by any column in any story is proportional to the total horizontal shear in the same story.

Referring to Fig. IX, the difference between the direct stresses in the fourth and fifth story columns, *i.e.,* (171,360—150,840)=20,520 pounds is taken up as a shear in the spandrel beam between corner columns. The moment of the shear to hold the joint in equilibrium is

Mo.=20,520 pounds x 18=369,360 foot pounds.

The bending moment for the fourth story column, having a leverage equal to the difference between the story height and the depth of spandrel beam divided by two, *i.e.,* 11 ft. 6 in—5 ft. 0 in.

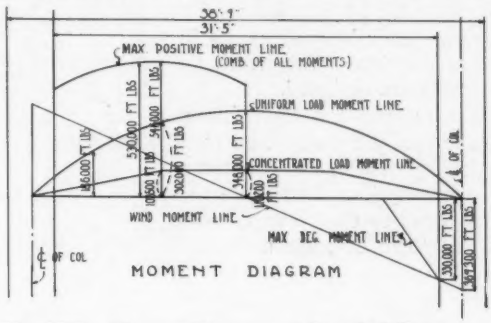


Fig. VIII. Moment Diagram of Spandrel Beam

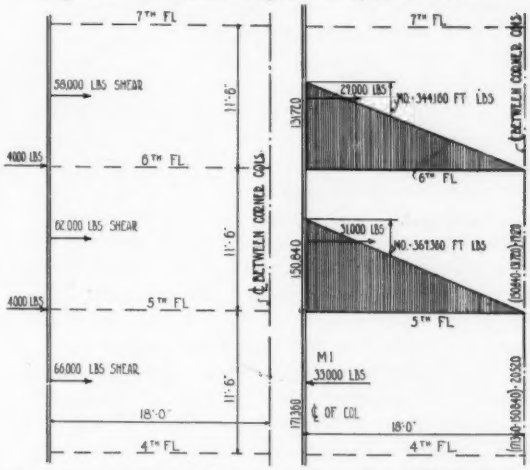


Fig. IX. Shears and Moments, Fourth and Fifth Floors

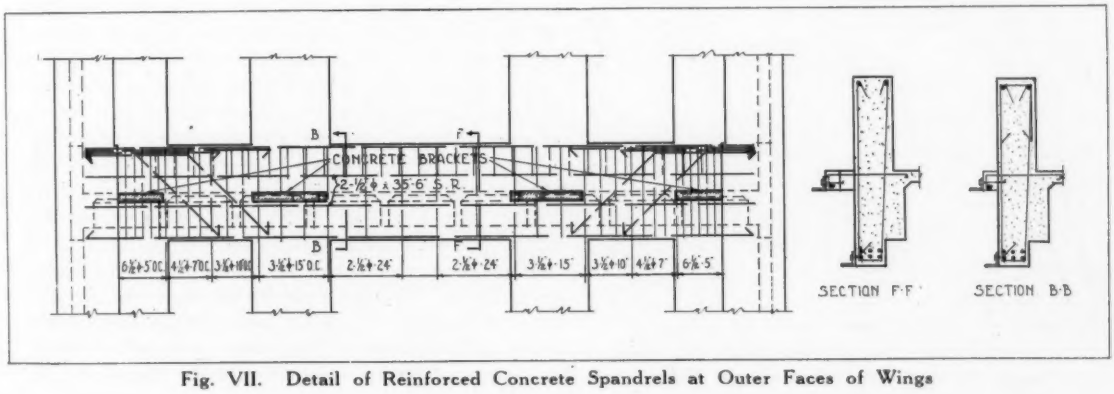


Fig. VII. Detail of Reinforced Concrete Spandrels at Outer Faces of Wings

= 6 ft. 6 in. ÷ 2 = 3 ft. 3 in.

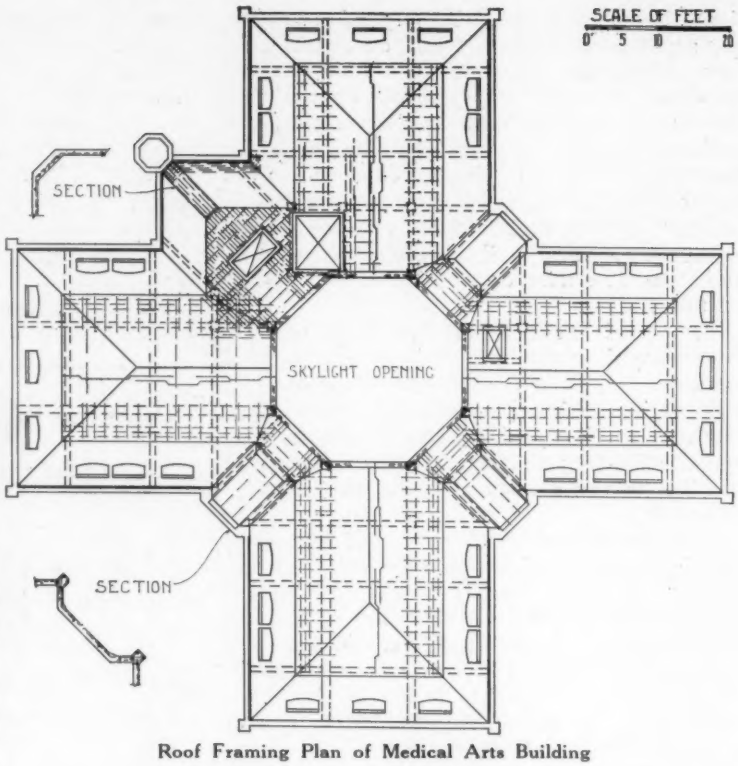
M1 = 33,000 x 3.25 feet = 107,250 foot pounds.

In like manner for spandrel at sixth floor:

Mo—19,120 pounds x 18 feet=344,160 foot pounds.

The mansard roof framing is composed principally of rigid frames and cantilever beams. From the ends of beams are suspended the loads of tank floor and two house tanks 6 feet in diameter by 18 feet long. The moment and shear diagrams indicate the forces for which the members are designed.

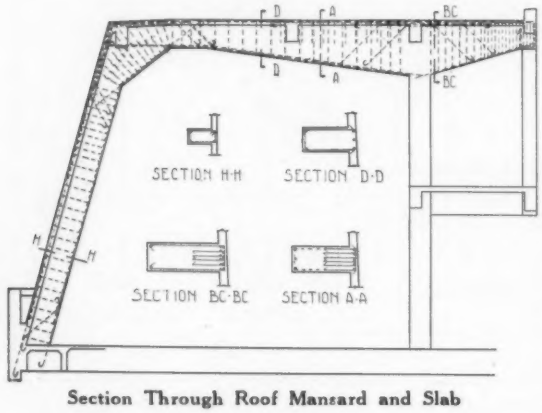
Calculations for rigid frames of the roof were based on more logical, practical, and conservative assumptions than those recommended by theories applicable to this form of construction. It will be interesting for readers to refer to the several excellent tests made at the University of Illinois, in 1918, of rigidly connected reinforced concrete frames. The assumed principle of continuity and the effective rigidity of joints as applied to the design of reinforced concrete frames, are somewhat inconsistent with the actual results determined by these tests. Discrepancies ran as high as 50 per cent.



Roof Framing Plan of Medical Arts Building

The design of rigid frames is another case where the engineer must visualize as well as theorize, and if the theories applied do not appear logical to the experienced mind, reasoning along common sense lines in conjunction with theory will inevitably give results far more consistent and intelligible.

In the design of any important structure where precedent is wanting, the engineer is frequently confronted with problems that require an application of common sense as well as technical knowledge in about equal proportions. Not infrequently the writer has computed the stresses in some member or arrangement of members by the use of formulæ too extensive to be really intelligible, and then, in the final analysis, subjected the theoretical findings to inordinate "abuse" through the injection of practical common sense, that the mind might be rendered composed and the structure stable. This understanding of the science of engineering may not be universally admitted, for in most instances it may be deemed preferable to enshroud the science with profound mystery, that others of lesser lights might acquire a deeper reverence for things apparently incomprehensible.



Section Through Roof Mansard and Slab

The Medical Arts Building presented very unusual wind problems. Unless one could visualize the effects of high winds acting on the vertical face of the building, any one of the several methods devised for computing approximate wind stresses would be of little service to a designer who possessed a knowledge of these theories without imagination. Even engineering requires an infinite amount of imagination, in degree proportional to that of the architect. The latter imagines and visualizes for the sake of convenience and beauty, while the former traces in his mind's eye the actions and resultant stresses in structural members under given loads. To the experienced engineer the various stresses in a member form impressions as intense and realistic as the artist's conception of his subject prior to its realization on the canvas.

A Group of Pencil Sketches in Northern Africa

By LOUIS C. ROSENBERG

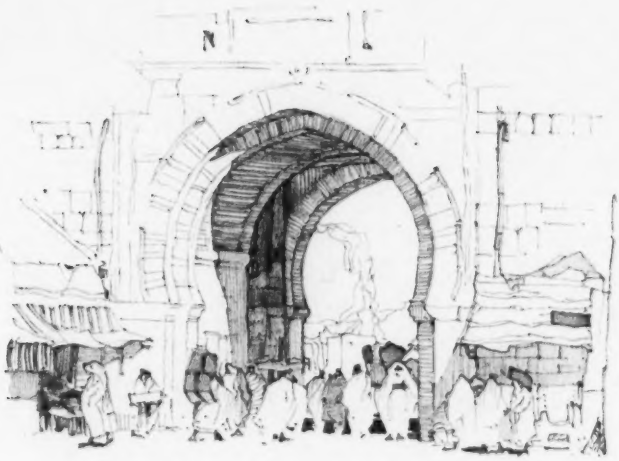
CONSTANTINE
SOUKS

ER

These sketches indicate the character of the fascinating Mohammedan cities of northern Africa, with their teeming crowds contributing in their costumes color notes that contrast with the whitewashed stucco over sun-baked bricks of the walls. Brilliant color is sensed everywhere; the costumes are sometimes of pure white, others of brown or brown and white stripes; red tile in the roofs, gray blue in the deep window reveals to reduce the sun glare; an occasional warm toned marble column salvaged from Greek or Roman days, and most brilliant of all, the street markets with fruits, grains and green stuffs massed against the walls—all combine in a veritable riot of color. The illustrations herewith are the same size as the original drawings.

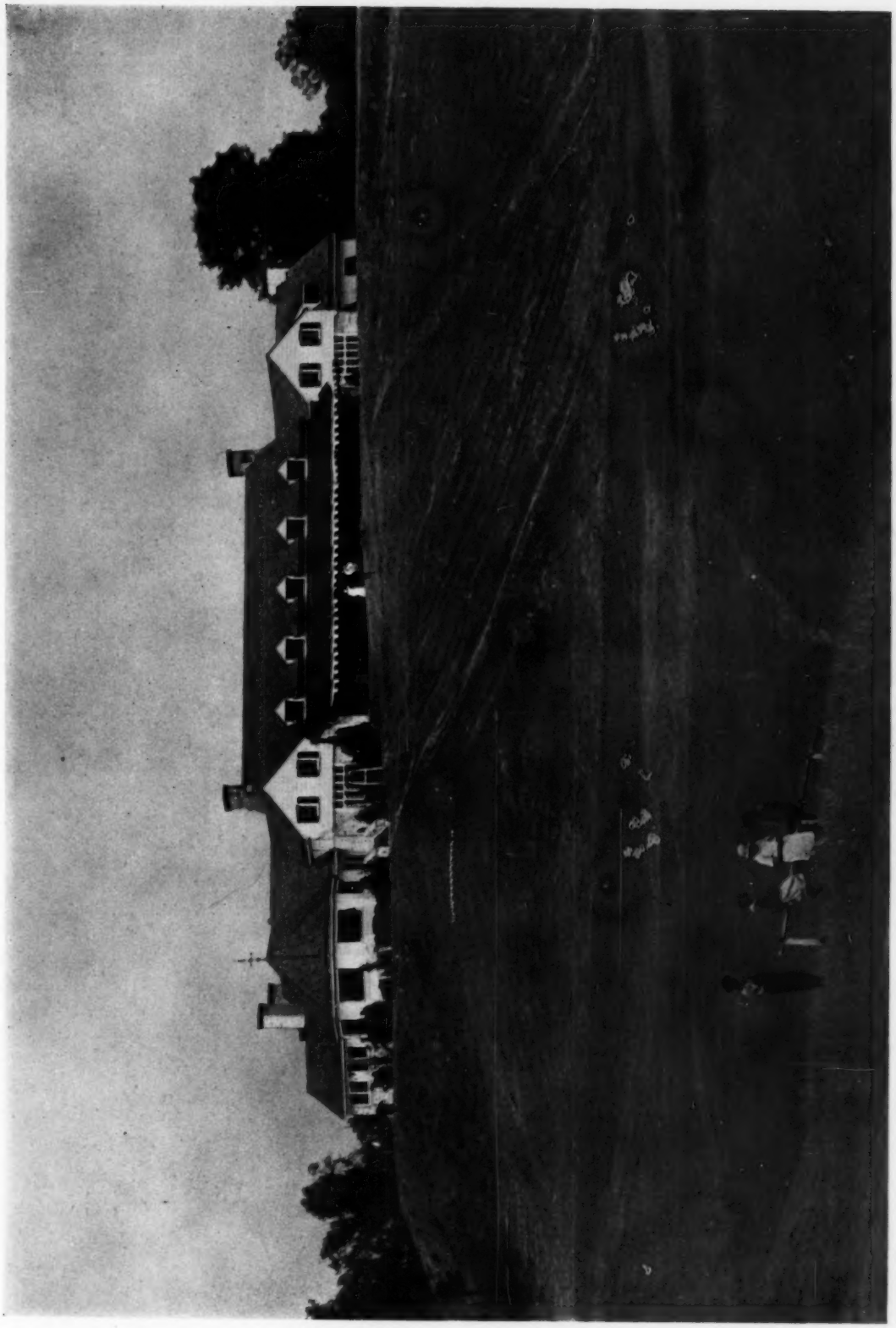
TUNIS.
SOUK EL GRANA.

FROM PENCIL DRAWING BY
LOUIS C. ROSENBERG



FROM PENCIL DRAWING BY
LOUIS C. ROSENBERG

FROM PENCIL DRAWING BY
LOUIS C. ROSENBERG



VIEW OF SOUTH FRONT OVERLOOKING GOLF COURSE
OAKLAND GOLF CLUB, BAYSIDE, NEW YORK
ROGER H. BULLARD, ARCHITECT

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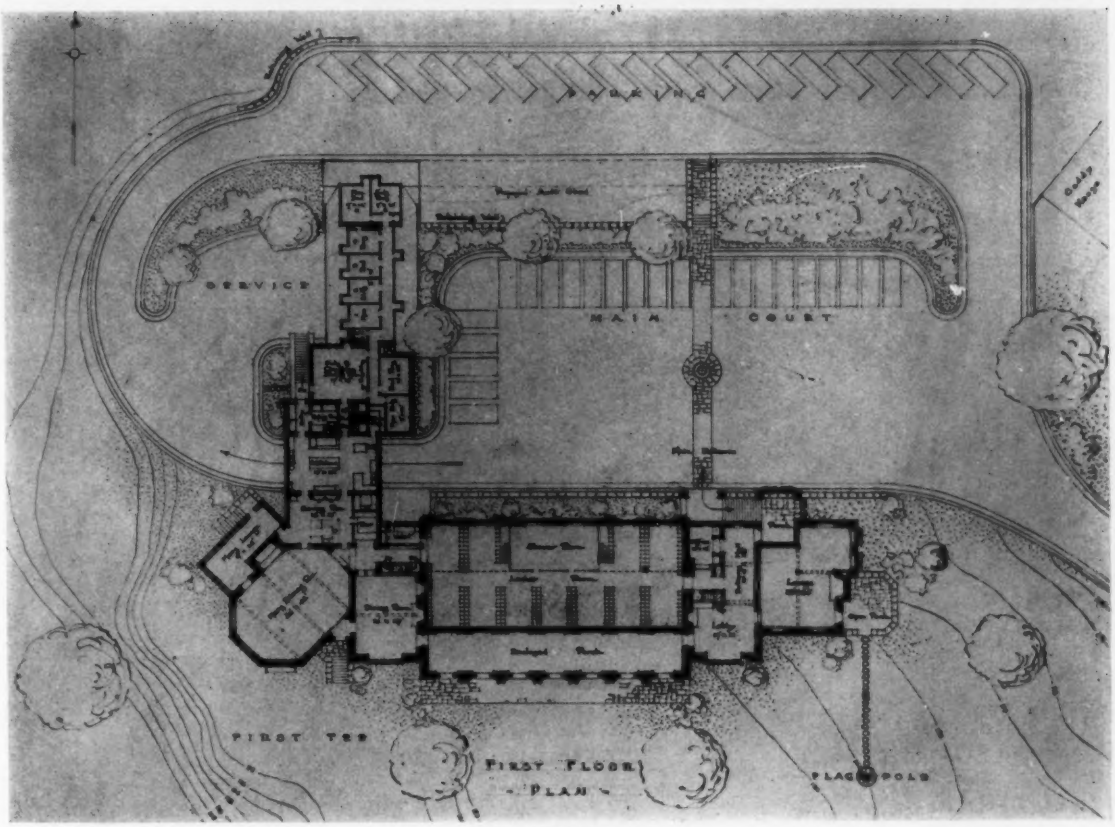
DISTANT EAST VIEW, SHOWING RELATION TO NATURAL GRADES



MAIN FLOOR PLAN

OAKLAND GOLF CLUB, BAYSIDE, NEW YORK

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SERVICE WING AND UPPER PARKING LEVEL

VIEW FROM NORTH, OVERLOOKING PARKING SPACE

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LOUNGE WING FROM THE COURSE

LOUNGE WING FROM MAIN COURT

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GENERAL VIEW OF LOUNGE

LOBBY AND STAIRS TO WOMEN'S LOCKERS

OAKLAND GOLF CLUB, BAYSIDE, NEW YORK

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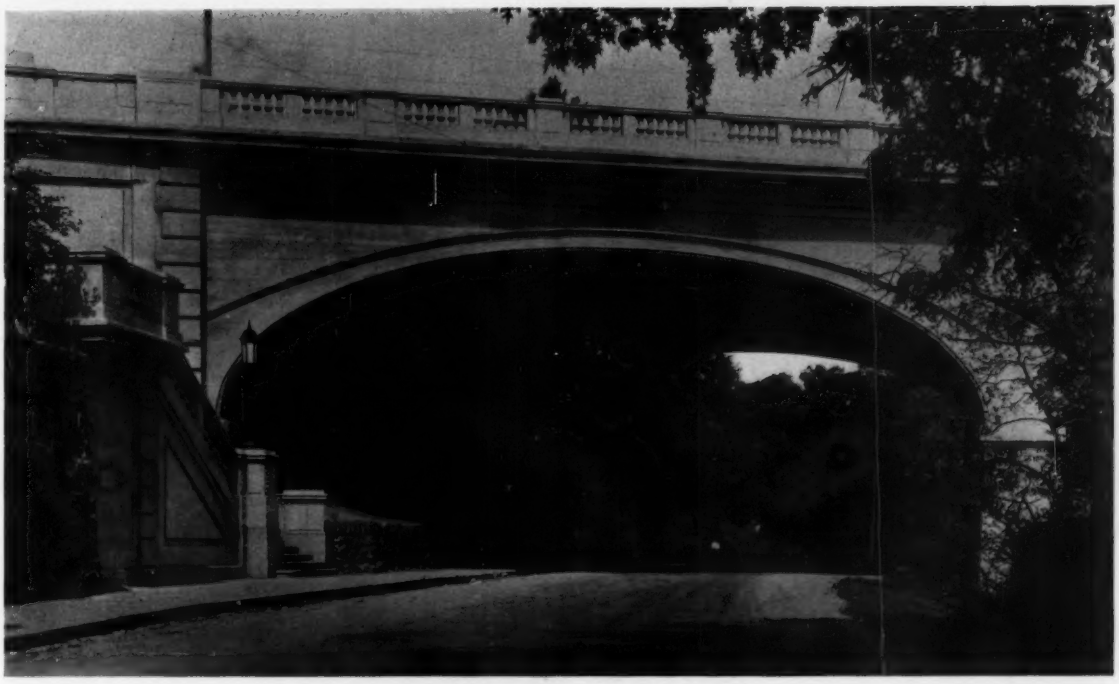
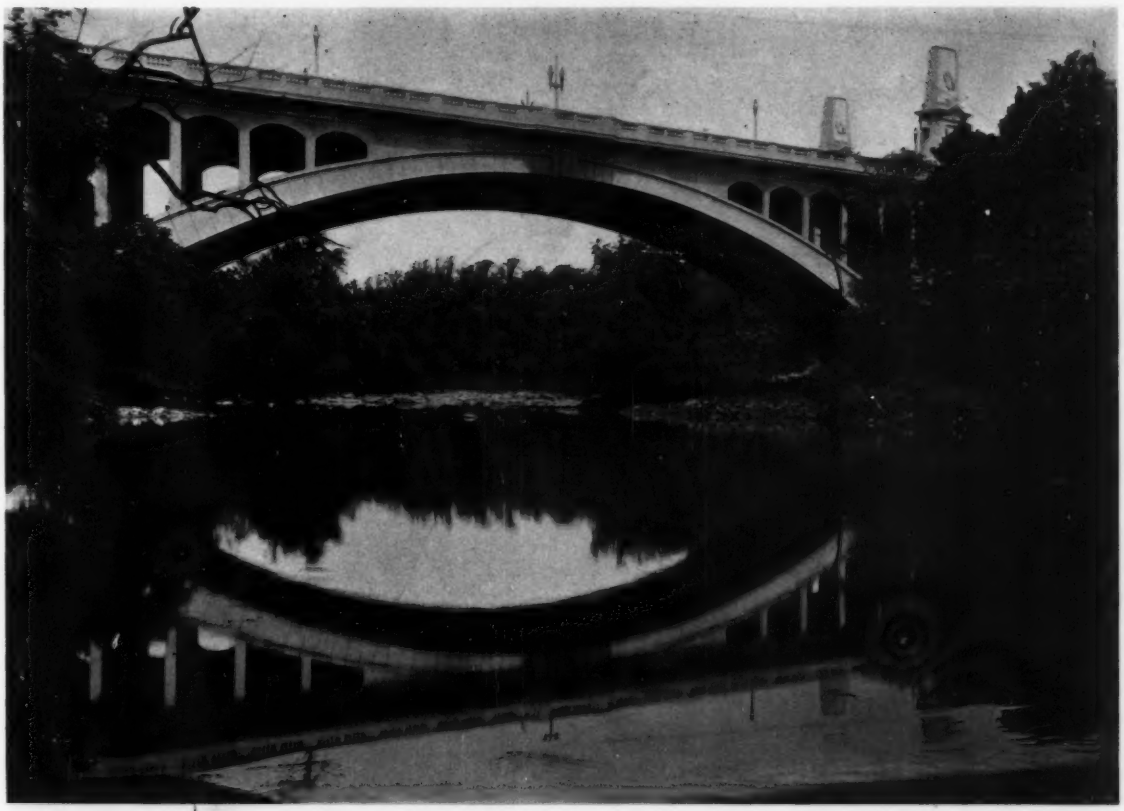


ELLIPTICAL ARCH OVER PARK DRIVE



CENTRAL ARCH SPAN

WASHINGTON MEMORIAL BRIDGE, WILMINGTON, DEL.

VANCE W. TORBERT, ARCHITECT; BENJAMIN H. DAVIS, ENGINEER

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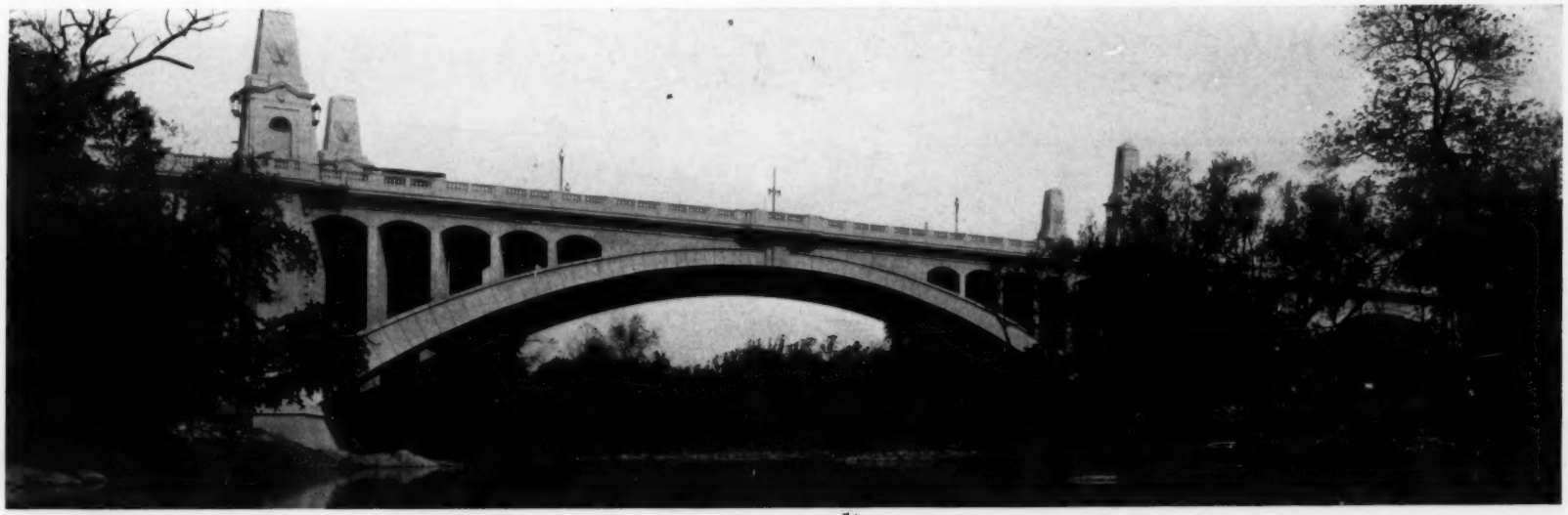
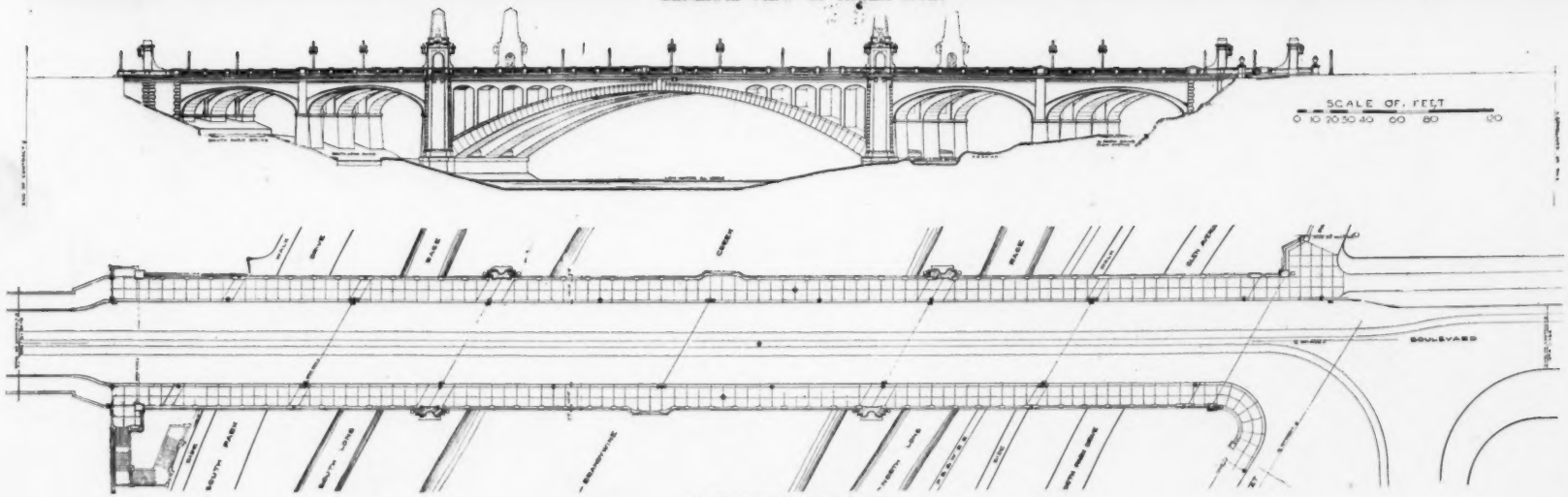


GENERAL VIEW OF RIVER SPAN



ELEVATION AND PLAN

WASHINGTON MEMORIAL BRIDGE, WILMINGTON, DEL.

VANCE W. TORBERT, ARCHITECT; BENJAMIN H. DAVIS, ENGINEER

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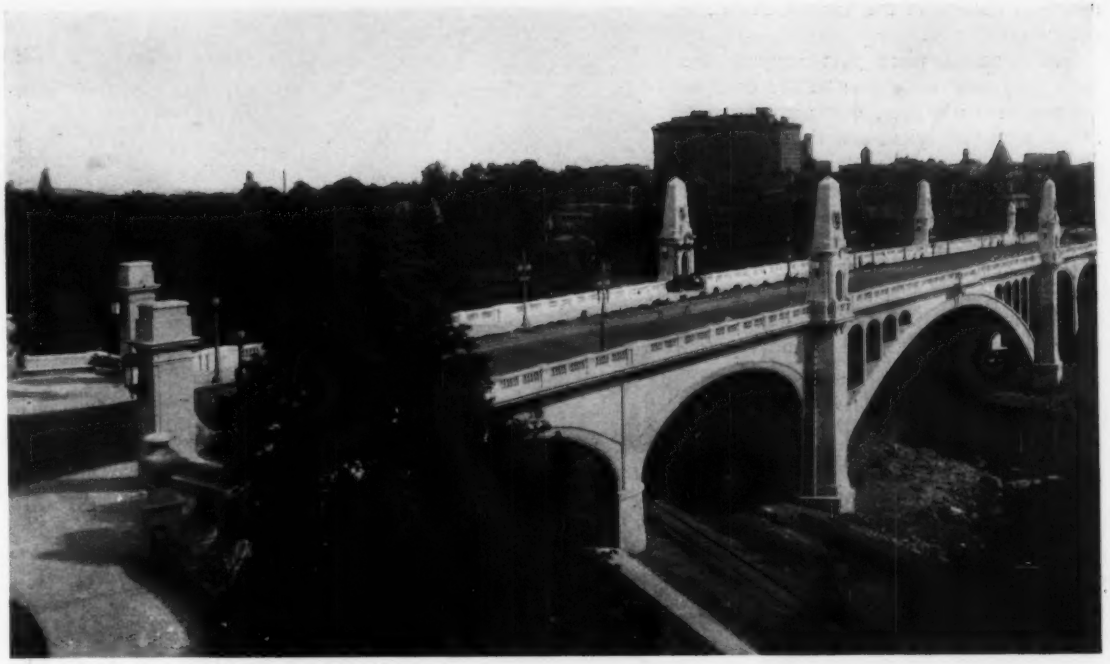
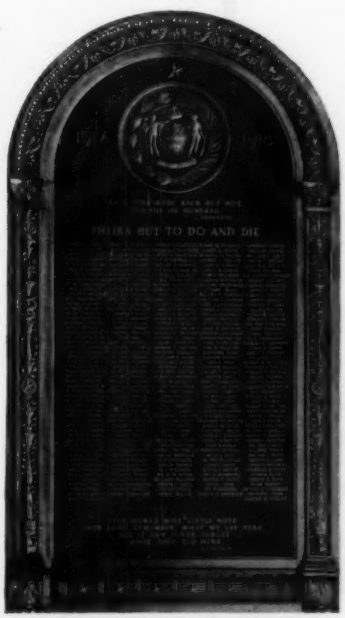


Washington Memorial Bridge, Wilmington, Delaware

By VANCE W. TORBERT, *Architect*

ON Decoration Day, May 30, 1922, a monumental structure, officially named the Washington Memorial Bridge, spanning the historic Brandywine creek and its valley in the city of Wilmington, Del., was formally dedicated as a war memorial. This bridge, in a locality that was the theater of stirring events during the war of the revolution and that is inseparably associated with the name of General Washington, not only commemorates the patriotism of the citizens of the state of Delaware in the revolution and subsequent wars, especially the World War, but also serves to carry the important traffic of the Washington boulevard.

The natural scenic beauty of the Brandywine creek and its bordering trees and shrubbery at this point led to the designers' conception of a great central arch of masonry as being the most appropriate solution of the problem. A large pool of water just below the site, already formed by a low dam across the rocky bed of the stream, would serve as a perfect reflecting basin for a bridge structure of monumental proportions. Thus, with a long span arch as the central or primary motif, numerous preliminary sketches were made with the secondary or approach arches in proper relation to the canals and park driveways on each side of the Brandywine, resulting in the final design, consisting of a segmental arch for the central span, symmetrically balanced on either side by two elliptical arch spans.



Detail of Bronze World War Memorial Tablet

The bridge is 720 feet long and 72 feet wide, and consists of the five arch spans of reinforced concrete, two of 70 feet, one of 250 feet, and two of 85 feet. Each span consists of three arch ribs, 11 feet, 16 feet, and 11 feet wide respectively and spaced 14 feet apart. The deck of the bridge consists of a 40-foot roadway, with two trolley tracks, two 16-foot sidewalks (including balustrades) and overhangs of 3 feet on each side. The piers of the bridge are on a 30-degree skew to avoid encroaching upon the canal and railroad property, and the large 250-foot arch of 40-foot rise is one of the longest low-rise

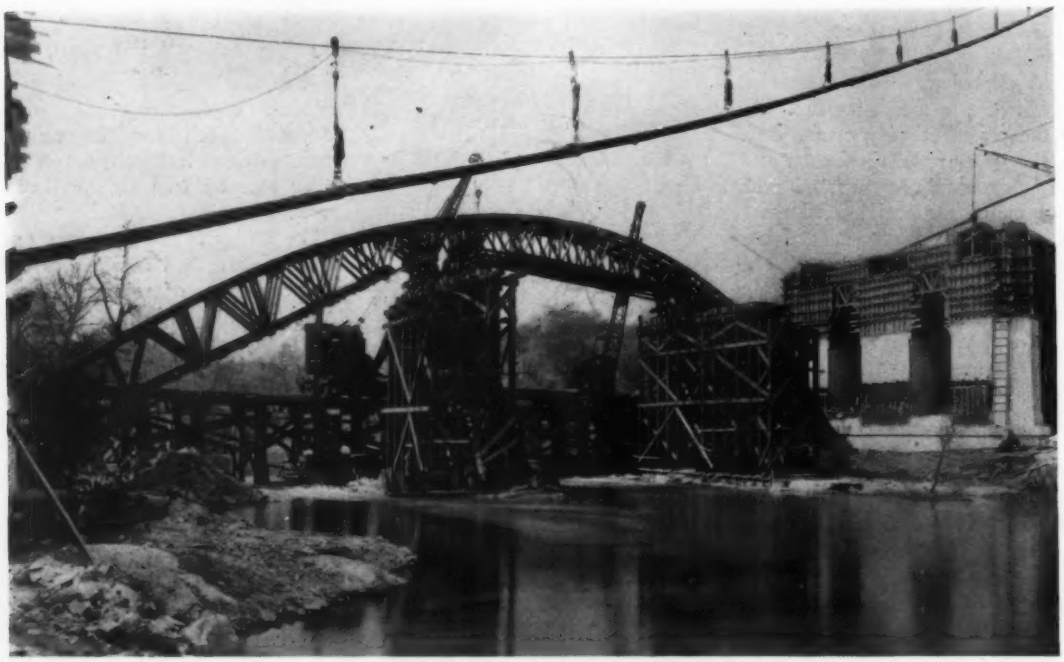
skew-arch spans in the United States, if not in the world.

The massive piers that support the large span are triangular at the ends to harmonize with the skew arrangement, and the smaller piers are rhomboidal in section with the outer faces parallel to the bridge. All piers are of the same width as the arch ribs they support. The piers are in separate sections for each rib, the sections being independent for the short spans, but connected by curtain walls to give a more massive monolithic appearance for the channel piers. The spring lines of the large arch were placed at an elevation that would be a slight distance above the highest flood level recorded for the Brandywine at this crossing.

North Approach to Washington Memorial Bridge
Vance W. Torbert, Architect

The arch ribs for each of the 70-foot and 85-foot approach spans, of 15-foot and 18-foot rise respectively, were concreted in wooden forms supported by timber centering. For the large 250-foot arch of the channel span steel centering was used, as this was considered more adaptable for the construction and offering greater security for the support of the long span skew arches. Furthermore, one set of steel centers served successively for each of the three ribs by being lowered slightly and moved laterally into correct position, and the rock bottom of the shallow creek afforded excellent foundations for the two temporary wooden towers erected as intermediate supports for this centering. The steel truss centers were built with curved top chords to which were bolted wooden nailing strips of variable thickness to provide suitable bearing and support for the 4-inch tongue and groove lagging used to form the arch soffits.

The main arch ribs were poured in alternate blocks and keys, each completed in one continuous operation. On account of the structural jointings thus formed, the vertical faces of the arch rings were further subdivided into V-shaped joints as



Steel Centering for Arch Ribs of Central Span
Vance W. Torbert, Architect; Benjamin H. Davis, Engineer

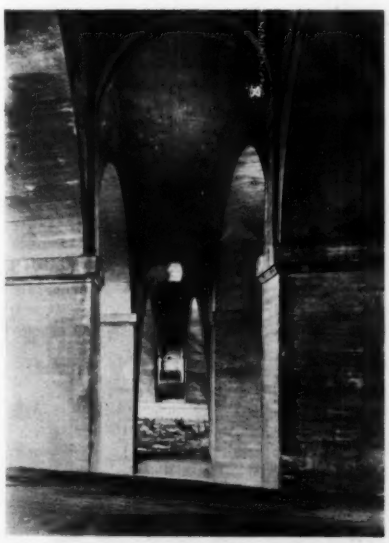
Detail of Steps Leading to South Drive, Washington Memorial Bridge, Wilmington, Del.

voussoirs of graduated width, and terminated at the crowns by projecting keys both inside and outside. This treatment, combined with the cove moulding formed at the extrados, contributes to the architectural effect and introduces appropriate scale.

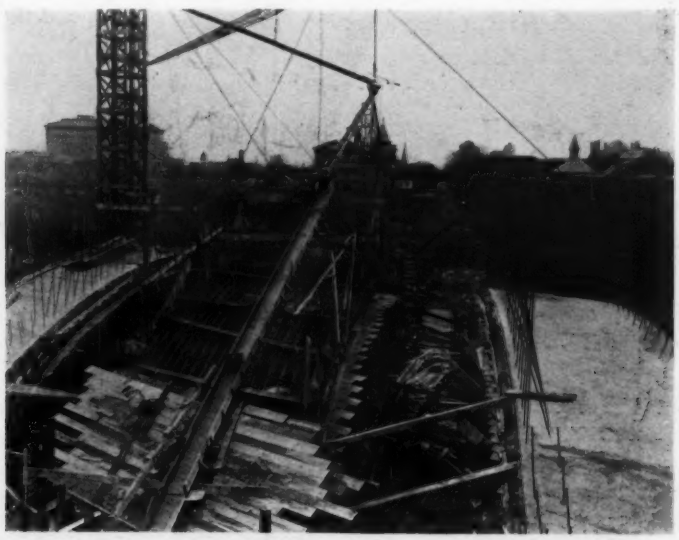
Expansion joints extending across the entire width of the bridge are located at all abutments, piers, and the third points of the large span. The floor slab at these joints was cut through free and clear and supported against bending by adjacent beams for the width of the roadway. The deck of the bridge and the backs of all retaining walls and abutments were waterproofed, and all expansion joints were flashed to prevent leakage to the underside of the structure. On the facades these expansion joints are effectively concealed from view by means of the panels in the abutment walls and the pilasters over the piers.

The three-arch rib construction permitted of a more pleasing treatment of the underside of the bridge by the elimination of the usual beam and girder construction and the use of a curved floor slab arched transversely between the ribs and continuous over the entire width of bridge. Jack arches conceal the expansion joints and serve to relieve the effect in the longitudinal direction. Over each of the arch ribs and immediately under the floor slab there is a continuous gallery, one of which is reserved for high tension electrical conduits, the second for low tension conduits, and the third for gas and water mains. A manhole cover over each gallery near the center of the bridge gives access. Each gallery is ventilated by the provision of small inlet openings between the jack arches at the piers and outlets through gratings at the bottom of the niches on the outsides of the large pylons and at the ends of the bridge in the form of 12-inch pipes carried to and up the small pylons.

Four large monumental pylons surmount the massive center piers and constitute the main architectural features above the sidewalk level and, furthermore, definitely establish the limits of the long span primary motif and emphasize the monumental character of the whole structure. On these pylons, which are 40 feet in height, the distinctly memorial features are embodied in four ornamental bronze



View Beneath Bridge Between Arch Ribs Showing Jack Arches



Construction View Showing Wood Centering and Reinforcing of Approach Arches

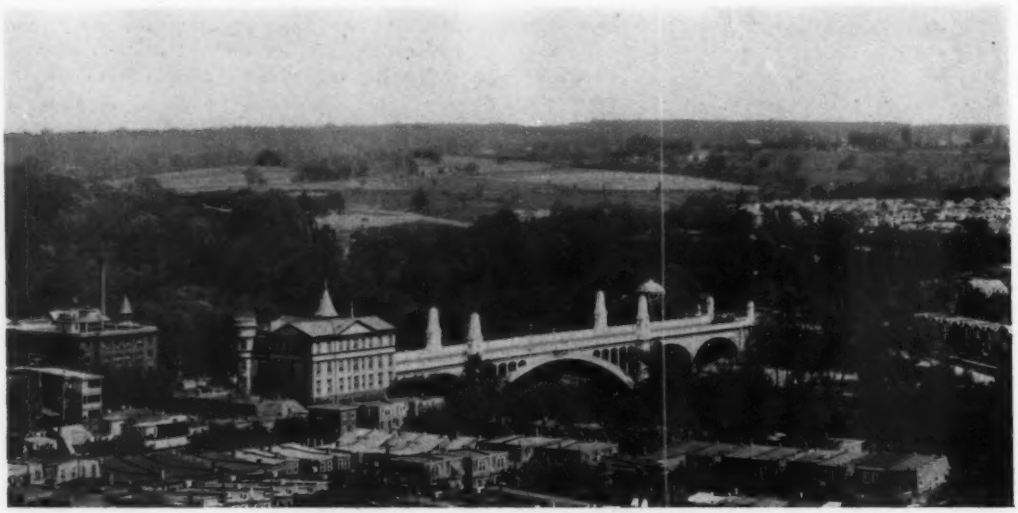
Detail of Monumental Pylon from Roadway, Washington Memorial Bridge

tablets, 9 feet high and 5 feet wide, placed on the inside faces in arched recesses where they can be viewed from both the sidewalks and roadway. The first two of the large tablets commemorate all of the wars of the nation, and the last two tablets commemorate the World War, one having the names of the great battles in which Delaware troops fought, and the other bearing the names of all those service men from the entire state of Delaware who made the supreme sacrifice. On the outer faces of these pylons the arched recesses are repeated in the form of niches which give balance to the design and interesting tones of light and shade in harmonious relation to the arch spans. On both the inside and outside at the cornice pediment is placed a carved shield bearing an ancient warrior's helmet in low relief, and on the obelisk portion above are large carved eagles mounted on spheres of emblematical form and representing that portion of the world where are located the principal nations which were engaged in the conflict of the World War.

Smaller pylons, of harmonious design, command the bridge portals and support bronze name plates, 3 by 4 feet, with official information and data pertaining to the bridge. On each side of the large pylons and on the approach side of the smaller pylons are ornamental bronze bracket lanterns, important features of the design composition of the bridge.

The exposed surfaces of the arch ribs, piers, abutments and spandrel walls are of plain concrete finish, carborundum rubbed. The pylons and balustrades are faced with light granite composite, about 2 inches thick, with a bush-hammered finish. The balusters and top railing of the balustrades, the eagles and spheres, shields, urns and cap stones for the small pylons were pre-cast because of the better execution of the architectural details obtainable than was considered possible with these features being cast in place.

The bridge was designed by and built under the supervision of Vance W. Torbert, architect, of New York, and Benjamin H. Davis, engineer. Alfred I. du Pont was chairman of the Washington Street Bridge Commission, and Frederick W. Carpenter was its local executive officer and consulting engineer. The construction of the bridge was financed by a county bond issue, authorized by state act, and the cost of the bridge was about $800,000.



Distant View of Washington Memorial Bridge, Wilmington, Del.
Vance W. Torbert, Architect; Benjamin H. Davis, Engineer

The Development of Charleston Architecture

PART II. CIVIC BUILDINGS

By SAMUEL LAPHAM, JR., AND ALBERT SIMONS

WHEN we turn to the bibliography of the architecture of the days of the colonies and the early republic, it is surprising to note how much greater a percentage of attention is paid to domestic than to civic architecture. Of course it is the first impulse to turn to that which is the most intimate and can be applied with the least change to the architectural requirements of clients of today, but, from the standpoint of architectural history, the records of the civic and ecclesiastical architecture of that time are ignored for those dealing with domestic architecture. It is true that the largest and most historic civic buildings, such as Faneuil Hall, Boston, and Independence Hall, Philadelphia, maintain their ground, but the minor public structures are rarely given their just due in the many monographs issued.

Nevertheless, it should be remembered that in these minor civic or semi-civic buildings there are records of immense importance; records of the tastes and inclinations of a community as a whole; records that should be studied as representative of the true group-reaction toward any architectural movement. An individual, although influenced by the prevailing fashion of the time, could and did put his own individuality into his house, if he so desired. When it came to community action, however, no person could solely impose his taste on a building, because he was no longer the only one to pass on the project. Therefore, the minor public buildings represent what the community (or at least the guiding spirits of the community) thought was appropriate in the matter of the architectural expression that a building, designed for a certain definite use, should have in order to fulfill its purpose. It is to buildings of this type that we must turn to find what a community thought was proper to represent them, their societies or their functions of government to the outside world. More than this, we learn also of the more creative side of the architects of those days—of how they solved their problems of design when faced with new conditions requiring larger vision and greater skill. We know what they accomplished in the domestic field, as it is on that work that their fame so securely rests. Here is another field in which to determine their ability and genius. And it will be by this civic architecture, in conjunction with ecclesiastical architecture, that our civilization will be judged in the future, for domestic architecture is the quickest to change and the first to fall by the action of time. Nine-tenths of our records of the architecture of past civilizations are of civic or sacred buildings. They are the most protected against change by the idea of sovereignty or sanctity that surrounds them—and so it will be with both our forefathers' and our own work, when future ages come to judge it centuries hence.

With these facts in mind, if we turn to Charleston as one of the earliest seats of colonial civilization of this country, we will find a sequence of civic buildings extending from 1767 to 1860. These survivors of fire and disasters have an architectural history which, independent of the political history that took place around and within them, has its own significance and its own important place in the ultimate development of our national architecture. In this article we can record but briefly a few buildings and state a few salient facts as seen by us, but trust that it will show how much ground still lies open for further close study of our heritage from the past.

The oldest of the purely civic buildings of Charleston is the Exchange Building or Custom House, commenced in 1767 and occupied in 1771. It is, as can be seen by the illustration, as pure an example of the English renaissance type as can be found in any of the colonies. For a pre-revolutionary building, we have the most plentiful documentary detail concerning it that one could desire. In the files of the *South Carolina Gazette* for 1767 can be found notices of the bill of appropriation for the building being read in the Commons Assembly on April 13, of the opening of bids on October 6, and of the awarding of the contract on December 1. There are also preserved the articles of agreement —which are practically detailed specifications for the building—between the commissioners for the province and the contractors, dated March 14, 1768, and the receipt of the contractors for the final payment, made January 4, 1772.

Messrs. Peter and John Horlbeck were the combined contractors and architects for the Exchange, as in those days the services of the two callings were generally combined. They appear to have been very thorough in their work, one going to England to personally select the proper materials and shipping them in a specially chartered vessel to his brother in Charleston. The whole construction seems to have been carried out with infinite care and with every endeavor to have everything of the best quality and workmanship.

While the Exchange, as it stands today, is just as it was built, it has suffered some curtailments of its original form. Although erected on the water front, the reclamation of land during a century and a half has placed it gradually nearly 500 feet inland. A narrow street on its front or eastern elevation has caused the sacrifice of a stone portico that rose almost from the water's edge, thus ruining the appearance of the main facade. This loss, combined with the growth of the warehouses around the

building, has practically reversed it and made the west front, originally designed as the secondary facade, into the chief elevation. Other losses have been the parapet, ornamented with classic urns, and the cupola that surmounted the entire composition.

The history of the cupola is of interest. Old prints of the building in 1780 show a square cupola with pilasters at each corner and a segmentary domed roof, surmounted by a Latin cross. We do not know if a storm destroyed this, but the records of the Collector of the Port in 1817 say that "the cupola has been taken down many years since." In 1833 the government made arrangements with Charles Frasier, the miniature painter, to design a new cupola, which was erected in 1835. This, in turn, was damaged so badly by the earthquake of 1886 that it had to be removed and has never been replaced. We are fortunate in being able to reproduce an old photograph of the building, found in the collection of W. M. Aiken, Supervising Architect of the Treasury from 1894 to 1897. This is taken from the northwest and shows the Frasier cupola, the parapet and the urns, all of which have disappeared today, the roof now rising directly from the cornice. With regard to the rest of the building, however, it is the same at present as is shown in the photographic illustration herewith.

Exchange Building or Custom House (1767)
Cupola by Frasier (1835)
See Measured Drawing on Page 300

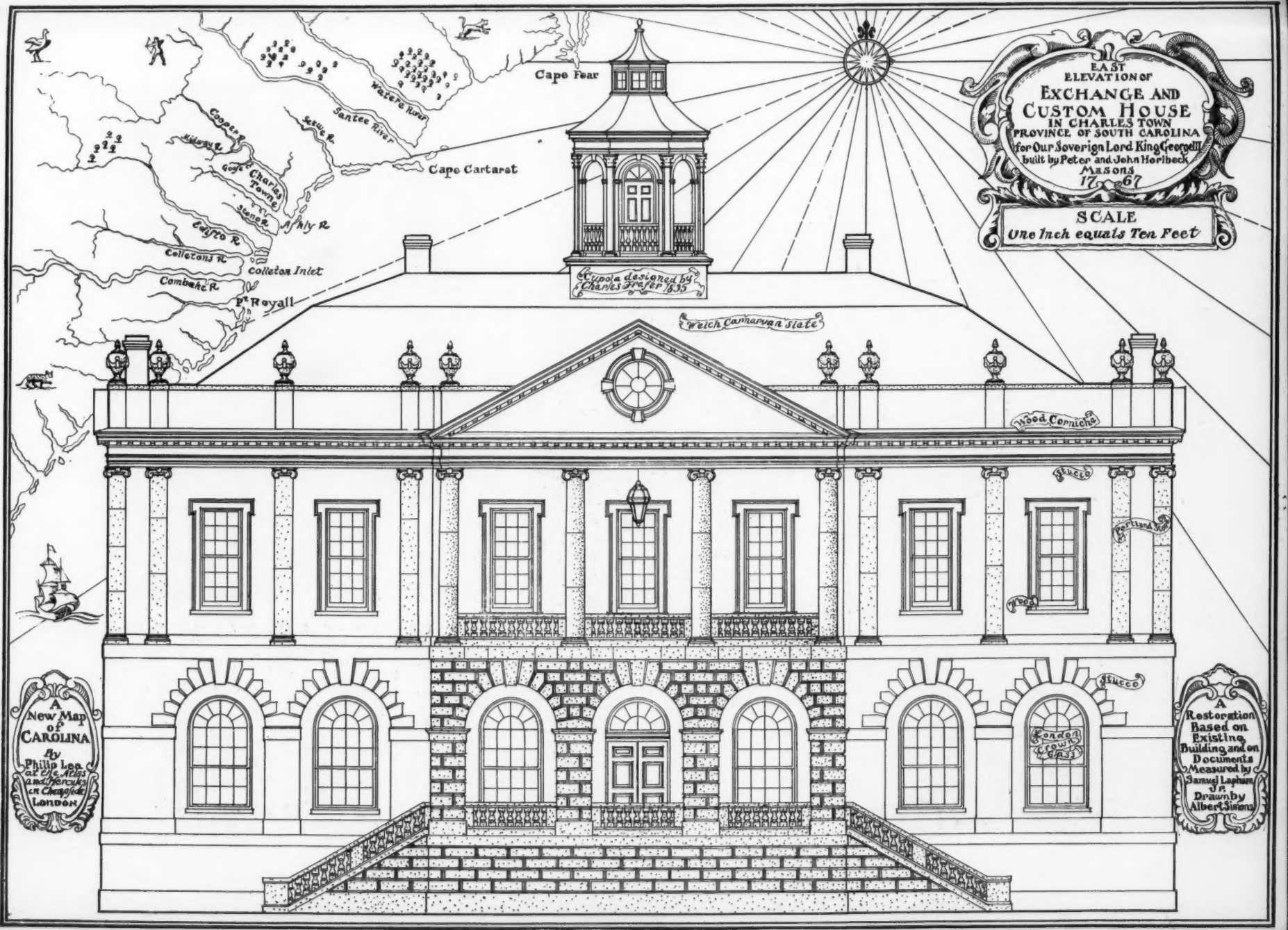
In 1913 the government conveyed the building to the Daughters of the American Revolution and the State of South Carolina as joint owners, to be preserved as a historic memorial, and as such it may be regarded as safely preserved for future generations.

Probably the first public building of any size erected in the city after the revolution was the County Court House, built on the site of the old State House, which was destroyed by fire in 1788. In Frasier's "Reminiscences of Charleston," published in 1854, and giving the author's recollections of the city as far back as 1791, are found these remarks on the court house: "The present state house was built on the foundations of the old and differed but little from it in its interior arrangement, retaining the old walls and doorways. It was originally a two-story building. I have always heard that the plan of the new building was furnished by Judge William Drayton, father of the late Col. William Drayton. But without knowing whether it was superior to the former one except by the addition of the attic, I have always thought it one of the best proportioned buildings in Charleston."

The original entrance to the building was on the wide side, which explains the reason for the projecting bay with the four engaged columns on that side. This is the earliest appearance in the city of a colossal order extending through two stories. The slender proportions of the columns and the use of the wall arcade below are characteristic of the Adam style. Outside of these features the building is, in general, an enlarged adaptation of the domestic type of the period with its quoins, belt course and pediment supported on consoles. These features appeared as early as 1762 in the Motte residence in Charleston. The applied ornamentation around the eastern doorway, with its orders, its broken pediment and inserted pedestal, is a change of unknown date. Prints exist showing both a plain entrance to match those on the south and an entrance that had an unbroken pediment carried on columns.

The City Hall was designed by Gabriel Manigault in 1801 for the United States Bank and was later purchased by the City of Charleston for its seat of government. The very attenuated proportions of the marble pilasters and engaged columns, the slight projection of the cornice of the south facade and the semi-circular bay at the rear mark a further tendency toward Adam design. This is one of the few buildings in the city where stonework was used on the main facade in place of the generally adopted imitation of stucco on brickwork. Gabriel Manigault, the architect for the building, is one of the first local architects that we know by name. He appears to have devoted himself to the designing of buildings rather than to their construction, thus being more the professional architect of today than the architect-builder of the colonies. He had a flourishing practice at this time, as several large residences and also the hall of the South Carolina Society, to which we will shortly refer, were designed by him.

The plans of these last two buildings are of little value as giving information in regard to the relationships originally existing between their component parts. Both the city hall and the court house,


EAST ELEVATION OF
EXCHANGE AND CUSTOM HOUSE
IN CHARLES TOWN
PROVINCE OF SOUTH CAROLINA
for Our Soverign Lord King George III
built by Peter and John Horlbeck Masons
17 67
SCALE
One Inch equals Ten Feet
Cape Fear
Cape Cartaret
Waters River
Santee River
Santee R.
Cooper R.
Wando R.
Goose Creek
Charles Towne
Stono R.
Ashly R.
Edisto R.
Coleton's R.
Coleton Inlet
Combahe R.
Pt Royall
Cupola designed by Charles Fraser 1835
Welch Carnarvan Slate
Wood Cornice
Stucco
Portland Stone
London Crown Glass
A New Map of CAROLINA By Philip Lea at the Atlas and Hercules in Cheapside London
A Restoration Based on Existing Building and on Documents Measured by Samuel Lapham Jr. Drawn by Albert Simons

Charleston County Records Building (1822)
Robert Mills, Architect

while in general unchanged externally since erection, have been so remodeled and rearranged internally to meet different uses and requirements that they retain only the most primary divisions of the original schemes and give but little indication of their character.

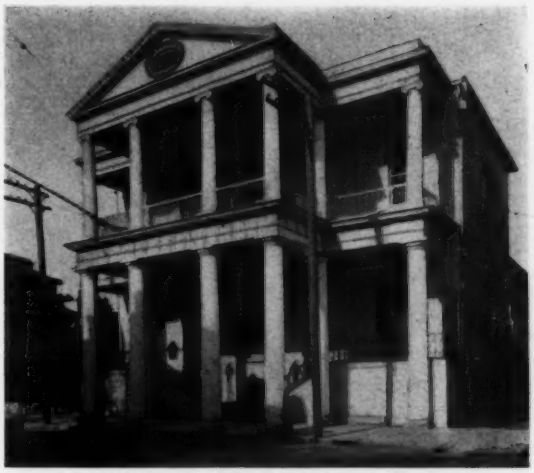
The oldest of the semi-public buildings existing today in Charleston is the home of the South Carolina Society, built in 1804. The society was founded in 1737 as a charitable organization, but soon became a social club as well, in which membership was eagerly sought. It was therefore able to build a hall for its own use, capable of taking care of its large meetings and banquets. Gabriel Manigault, mentioned in connection with the city hall, was also the architect for the South Carolina hall and successfully interpreted the character that would be desired by such a society. The entrance portico extends over the sidewalk—those being the good old days when city street lines were by no means sacred—thus sheltering the stairs leading to the high main floor. This gives a very happy effect, the stairs being monumental enough to serve their public function, yet retaining their private character through the shelter of the projecting portico. The stuccoed Doric columns of the entrance, although rather attenuated as their height has to include the high base as well as the first floor, aid the monumental air and blend with the severe lines of the body of the building. The wooden Ionic columns and cornice of the wide second story piazza counteract the extreme severity and bring the whole composition back from cold public formality into the intimate atmosphere of personal relationship and social intercourse. The detail of the interior is especially charming. The mantel-pieces, door and window frames display the scheme of Adam decoration at its very best.

By the beginning of the third decade of the nineteenth century the classic revival in its Roman phase, with the Greek phase closely following it, had spread throughout the country. In the County Record Building (1822), by Robert Mills, we find a treatment of proportions that resembles a modified Greek Doric type. As Mills was an engineer as well as an architect, all his structures have a certain feeling of having been reduced to the fundamentals with the inclusion of as few secondary members and decorative motives as possible. The Baltimore Washington Memorial, the Bunker Hill Monument, and the Washington Monument, all from his hand, are essentially structural designs only, and even his work in later life smacks of the same character. In the building under consideration, Mills outdid the Greek Doric and the Tuscan orders in simplicity. His mouldings are reduced to the fewest possible, and those have profiles of the most elemental character. This building will well repay study. The utter bareness and simplicity of each part are amazing, but it is equally amazing to find that, to the casual glance, the building displays no appearance of bareness, but instead, a most satisfying appearance of completeness coupled with proportion. It may be said to be one of the first, if not the first, fireproof structures in the country. As the depository for the county records, it was Mills' aim to

Charleston County Court House
Erected Between 1788 and 1800

make it fireproof, and from the time of its erection to the present day it has never been referred to locally save by the name of "the fireproof building," thus showing the deep impression that was created at the time of its construction. It certainly was as fireproof as it could be made with the materials at the disposal of the architect in those days. Not only the exterior walls but the inner partition walls were of brick for their full heights. The floors, therefore, could be carried on vaults of brickwork, thus obviating joist construction entirely. All openings have stone lintels or are made with circular heads in order to have a brick arch to carry the superimposed load; the floors are paved with stone slabs, carried by the brick vaults, and an interior flight of stone steps leads from the basement to the second story within a well of brickwork. A monograph could easily be devoted to this building, both in regard to its structural and its æsthetic design.

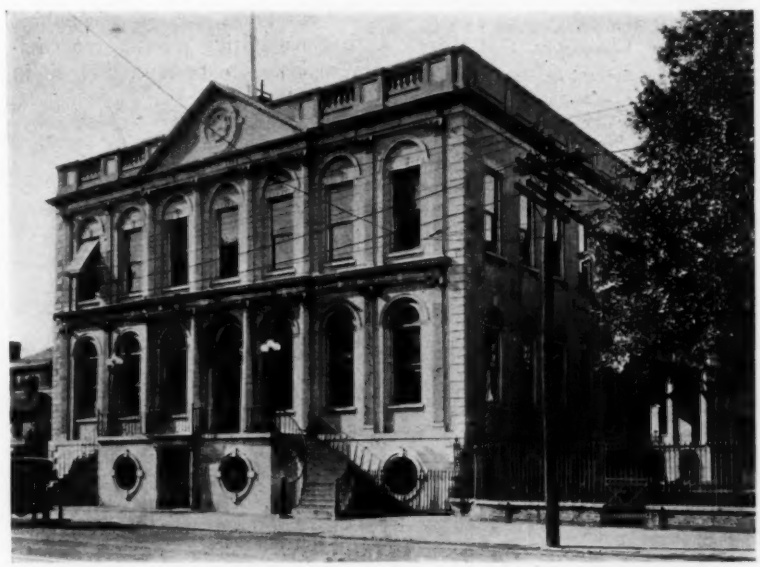
The College of Charleston can trace its history as far back as 1770, and as the college has occupied the same site for 150 years it is no surprise to find on its campus work that dates from every period of our architectural history. The main block of the college is a composite building, formed by the needs of a century and a half. The foundations, almost 3 feet thick, are the sole remains of two revolutionary barracks buildings that were utilized for college purposes in 1790. By 1825 these were in need of enlargement and repair, and we find the citizens subscribing to a fund for the erection of a central building. In the minutes of the board of trustees, for July 26, 1826 is the notation that the building committee be authorized to contract for a central building as soon as $10,000 were on hand, "agreeable to a plan to be obtained from a regular architect."



South Carolina Hall, Charleston (1804)
Gabriel Manigault, Architect

In August of the same year, the secretary is instructed "to apply to Mr. Strickland of Philadelphia for a plan for a college building." In November, 1827, the contract for construction was given to Mr. Wm. Bell; the cornerstone being laid with Masonic ceremony on January 12, 1828. In the Charleston Library is preserved a pamphlet containing the address made on this occasion and a cut of the building, showing that the present portico was not included in Strickland's original scheme. Mr. Bell's final and total bill of construction, including extras, is recorded in the minutes of May 31, 1830 as amounting to $13,222.40.

In 1846 more room was needed, and we also find a committee recommending the addition of a portico on the south front. At that time Col. E. B. White was in Charleston as superintendent of construction for the new Custom House. He seems to have been able to combine a private practice with his official occupation and his army duties as he is known to have been the architect for the office of Judge Pettigru in St. Michael's alley and also, on May 4, 1850, we find him appointed by the trustees as architect for the new college buildings. These consisted of outer wings to the main building of 1828, presumably the portico to it and the combination entrance gateway and janitor's lodge. This gateway is a product of the high noon of classicism and could serve in any textbook of the orders as a copy plate for the Tuscan



Charleston City Hall (Originally the United States Bank), Erected 1801
Gabriel Manigault, Architect

College of Charleston, Charleston, S. C.
Central portion erected in 1828; extreme right and left wings and portico erected in 1850

order. It was built certainly prior to 1852, as the minutes of October 18 of that year contain regulations governing the janitor occupying the lodge. Both wings erected by Col. White fell in the earthquake of 1886, but were restored on the same lines, the east in 1888 and the west in 1895.

The small College Library on the west of the campus was built in 1855. In the minutes we find ourselves in a most modern atmosphere of architectural practice, which seems quite out of place with the date. Three architects submit plans, the board selects one, then reverses itself and elects one of the rejected competitors. The bids run high; the committee wishes to build for $8,000; one contractor cuts his bid to $9,000 and is given the job. He, in turn, goes bankrupt and the whole matter is taken to the courts for settlement. We also come across our first record of an architect's pay as we find Mr. G. C. Walker's bill for architectural services in the minutes, the same being 5 per cent on the total $9,000.

The collection of pamphlets that gives us the cut of Strickland's building for the College of Charleston also furnishes one of the Medical College building, erected in 1827. The cut gives the name of F. Wesner as architect, and he certainly deserves credit for a most tasteful little structure. Today, with its portico destroyed and the building itself but a shell, we prefer to give a reproduction of this old cut rather than one of a decaying structure that will soon disappear.

In the Hibernian Hall, (1840), we have the first semi-public building of the pure Greek type to appear in the city. Among the churches however, Mills' First Baptist Church (1822) shows Greek proportions, although Roman in detail, and the synagogue of 1840 is Greek Doric. The first move of the Hibernians towards having a hall was made in 1828, but the society immediately divided itself into two camps—those wishing a hotel and those desiring a hall. The two parties fought tooth and nail for ten years, and it was not until 1838 that the hotel faction yielded and the building committee was definitely authorized to build a hall. What the poor architects suffered during this decade can best be realized by those who know the profession from the inside. We find "T. W. Walker, architect, of Philadelphia" submitting plans for a combination hotel and hall in

Entrance Gateway, College of Charleston, Charleston, S. C.
Erected before 1852

Engraving of Medical College of South Carolina, Charleston, S. C.
Erected 1827, F. Wesner, Architect

1833; in 1834 he submitted two other plans, and there were various plans from other architects; in 1835 the committee reports that they had advertised for plans in New York, Baltimore, Washington, Boston and Philadelphia, had received estimates and awarded premiums, but there is no mention of a selected architect. The cornerstone names no architect, although the stonecutter, the carpenter and the bricklayer are recorded there. The committee doubtless thought any mention of the architect unnecessary in view of their own knowledge, which they thus recorded in their report:

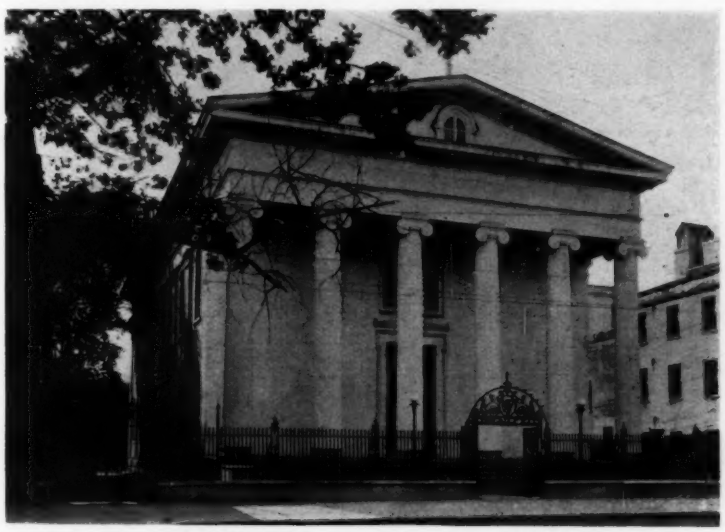
> "The materials of architecture may be compared to words in phraseology having separately no power but which, linked together by ignorance may excite ridicule or disgust, or may be so arranged by skill as to affect the mind with the most thrilling sensations or sublime conceptions.
>
> "Of this latter character we acknowledge the remains of those beautiful and venerable reliques which once adorned the temples of Attica and Italy; from one of which, the beautiful Ionic Temple, consecrated to the Muses, on the banks of the Ilisus, is your hall selected. In this selection your committee will not permit itself to doubt that they were but responding to the best feelings of the members of this Society and that a unanimous approval awaits their decision."

The "sublime conception" in this case consists of a colonnade of Greek Ionic columns, surmounted by a pediment. Internally, the building consists of a large hall on each floor with the necessary dressing rooms, committee rooms, etc. The entrance leads into a large stair hall, in the center of which an open rotunda extends to the roof. This is carried by the three Greek orders, very correctly superimposed, and crowned with a coffered dome. Fortunately for the peace of mind of the classicists

Market Hall, Charleston, S. C. (1841)

on the committee, the second story is of such height as to allow the Ionic and the Corinthian orders to be superimposed without difficulty, although the circular balcony that the Corinthian columns rest on, cannot be reached in any way save through a trap door in the ceiling of one of the dressing rooms. As an interesting comparison with the prices of today, we find that the committee reported that the hall would cost $78,000 in stone and $48,000 in brick covered with cement, the building being 60 feet by 125 feet. As with almost all other work in the city, the brick type was chosen, but the actual final cost, according to the records, was close to $55,000.

With the classic revival in favor for both civic and ecclesiastical buildings, we find that the Roman type had as many adherents as the Greek, and the field was equally divided between the two from 1840 to 1860. In 1841, the year of the dedication of the Hibernian Hall, we find in the Market Hall, above the market where the produce of the country was brought for sale, a pure Roman Doric temple on a high podium. This building is as good a copy plate for the Doric order as the lodge of the College of Charleston is for the Tuscan order. The metopes are filled with bulls' heads, rams' horns and wreaths, and even the neckings of the columns have the characteristic little rosette ornaments. Conforming to the other buildings, the Market Hall is of brick covered with stucco, but, on account of the completeness of its detail, it exhibits strikingly the skillful handling of the stucco and the careful modeling, simulating details originally designed for building with stonework.



Hibernian Hall, Charleston, S. C. (1840)
The First Semi-Public Building of Pure Greek Type

Bennett's Rice Mill, Charleston, S. C. (1844)

In Bennett's rice mill (1844) we see to what lengths the desire for classicism was carried, as here, in a purely industrial building, we have engaged orders, Palladian windows and details from the palaces of the Italian renaissance. Nevertheless, the unknown architect combined them to give a most striking composition and imparted to the building a most unusual air of distinction and individuality.

The Custom House (1850), by Col. E. B. White, whom we mentioned in connection with the College of Charleston, is the last of the public buildings in the period before the Civil War. Although patently of the type that, inspired by the national capitol, has produced so many state capitols and public buildings, it is beautifully executed and has detail and feeling enough to lift it out of the commonplace. Although originally planned to be crowned by a high dome and to have a portico at each cardinal point of the compass, through the intervention of war, only the east and west porticoes were built. Constructed of stone throughout, its Roman Corinthian porticoes dominate the water front as in some landscape after the manner of Claude-Lorrain and make it an architectural landmark worthy of the government that it represents.

In a sketch like this we have been able to examine only some of the chief civic and semi-civic buildings of the city, with hasty remarks to show the trend of influence and ideas that affected their material form and make them significant today as architectural documents of a period formative and historical.

Like each of the older cities on the Atlantic seaboard Charleston has its own architectural traditions and its own methods of using classical motifs and antique forms. From this glance into the past, it will be clearly evident that architecture in Charleston has been distinguished by dignity, by refinement and by a scholarly appreciation for correctness of form. In our present day quest for progress and modernity, which is altogether to be commended, let us not ignore the value of this great heritage, which is far more valuable than mere pedantry and more vital than mere sentiment; it is nothing less than the records of the ideals of a people.

United States Custom House, Charleston, S. C. (1850)
Col. E. B. White, Architect

Analyzing the Last Three Years of Building Activity

By C. STANLEY TAYLOR

IN this article there is presented for the first time a detailed graphic analysis of the building boom of the last three years. Nineteen charts are used to illustrate data which should prove extremely interesting to architects for the purpose of measuring the relative activities in different offices.

This information will also be found of direct value in discussing with clients conditions affecting new building projects. The activity which has taken place in each of the seven important building types is clearly pictured for the past three years.

The sequel to this article will appear next month as a forecast of building activity for 1924, based on reports received from nearly 2,000 architects and classified geographically and by building types. The combined information afforded by these two articles will give an exact analysis of the building situation as it affects the individual building problem of the average client, and will help him to determine the feasibility of immediately undertaking the proposed project.—*The Editor.*

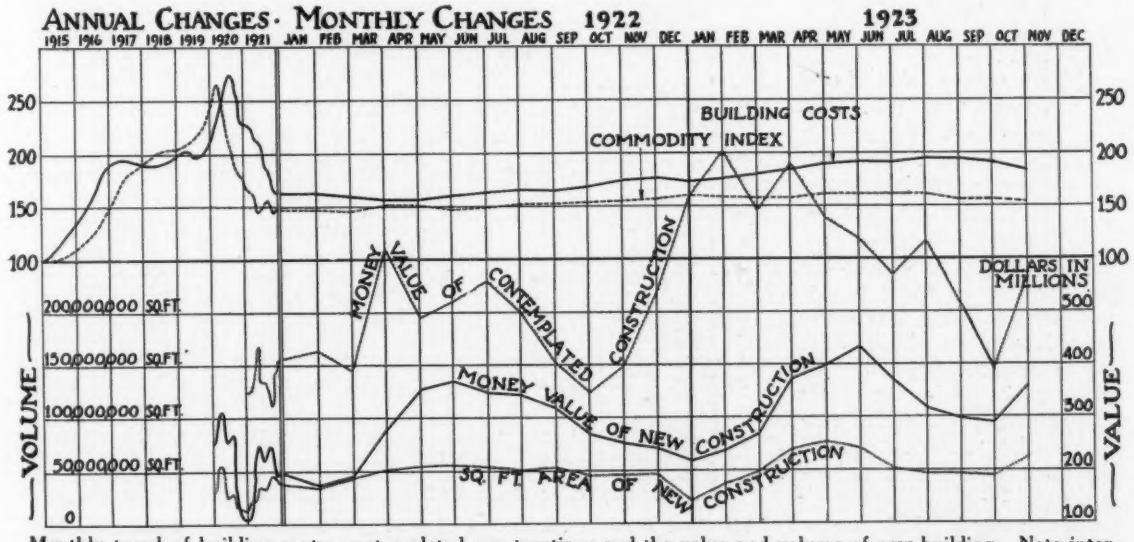
THE purpose of this article is to show clearly the part played by each of seven important building types in the unusual building activity of the years 1921, 1922 and 1923. It is also proposed to indicate the important basic factors which influenced and controlled building conditions during those years, so that the present building situation, as affecting anticipated activity for 1924, may be established against a clear background of facts.

In architectural circles, and generally throughout the construction industry, it is recognized that the last three years constitute the greatest period of building activity ever known in this country. Few individuals have either time or sufficient statistical data to thoroughly analyze new construction figures for this period, and as a result references must be somewhat vague in character and of little constructive value in discussions between the architect and his clients or when the architect is attempting to analyze his own business in relation to the unusual activity of the years in question.

In order to present this analysis in the clearest and quickest way we have selected the medium of graphic charts, 14 of which will be found in the color section immediately following this article. The 14 charts in question present an analysis of these seven building types, first as to the amount of money invested in new construction in each type, and, second, as to the physically measured volume of new construction in each. The types considered are:

1. *Residential Buildings,* including dwellings, apartments and hotels.
2. *Commercial Buildings,* including office buildings, banks, public garages, stores, and storage and warehouse buildings.
3. *Industrial Buildings,* including factories and power plants.
4. *School Buildings,* including structures of all types for schools, colleges and universities.
5. *Hospital and Institutional Buildings,* including sanatoriums and homes.
6. *Club and Recreational Buildings,* including fraternal buildings and auditoriums, theaters and welfare buildings.
7. *Church and Memorial Buildings,* including convents, monasteries, chapels and parish houses, covering all religious activities.

The graphic charts are arranged to indicate total monthly averages throughout the three-year period, and by the use of colored lines it has been possible



Monthly trend of building costs; contemplated construction; and the value and volume of new building. Note interesting resumption of activity in October, 1923. (This chart appears each month in the Service Section of The Architectural Forum, recording new data in order that architects may know the exact building situation

to superimpose the years so that a quick comparison can be made for each month. The first series of charts indicates the amount of money invested each month in the various types of new building construction. At the left of the charts will be found a scale, given in millions of dollars so that each monthly figure may be easily read across. Similarly, in the second series of seven charts the information as to new construction is given in physical volume as measured by the number of square feet involved. At the left of these charts will be found a scale established in millions of square feet for the first four charts and in 100,000-square foot units for the last three charts, the scale having been raised for clearer indication in these building types which involve a volume too small to be shown properly on the 1,000,000-foot scale. With the exception just noted, these charts are subject to immediate graphic comparison, so that the relative activity in each building type is shown instantly.

Before taking up a detailed consideration of the 14 charts already described, it will be of interest to examine carefully the chart shown on the first page of this article which indicates the trend of several important factors in the building field during the three years. This is the chart which appears regularly each month in THE ARCHITECTURAL FORUM on the first page of the Service Section (yellow pages in the last section of the book). This chart shows the monthly variation of building costs as indicated by the line in the upper section. It also shows the variation of general commodity costs. In the lower section of the chart will be found

(a) the monthly averages of contemplated construction (which is the report of plans filed throughout the country);

(b) the money value of new construction (the total of contracts let);

(c) the volume of new construction (the square foot area represented by contracts let).

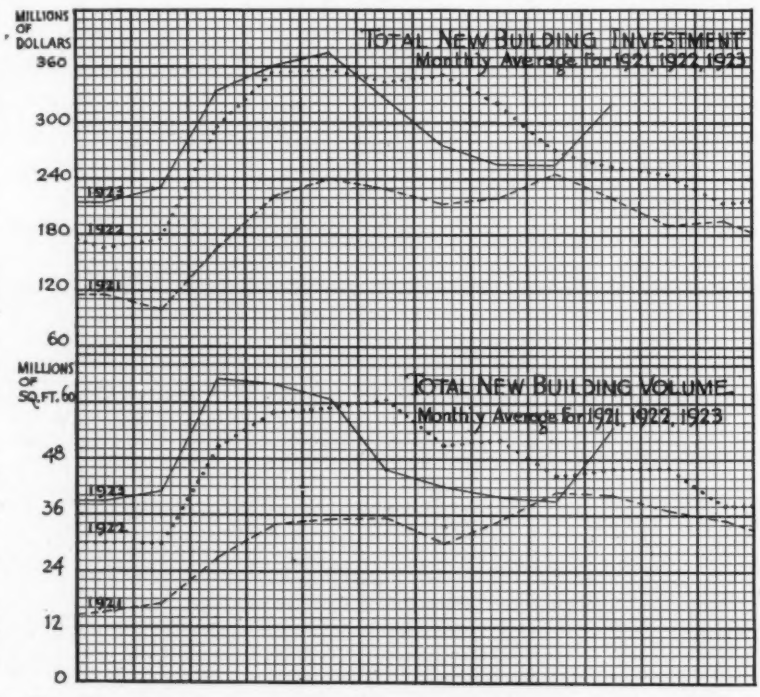
In order that an exact comparison may be made of the total new building investment and volume, there will be found on the second page of this article a chart with the yearly lines superimposed which represents the totals of the 14 individual type charts following.

This analysis has been started with January, 1921 because (as an examination of the chart on the first page will show) that period represented approximately the middle point in the rapid drop in costs which had started in 1920 and continued to the end of 1921.

We have for comparison the year 1921, when costs were dropping rapidly and confidence of the investing public was being shown by the development of unusual building activity; the year 1922, when costs carried on at the new level and then turned upward again as a result of continued building activity; and finally the year 1923, when in spite of rising costs the greatest activity of any year has been witnessed, including the phenomenon of a winter building boom as indicated by the sharp upturn of the lines in October.

This unusual increase in activity as shown in the month of October is represented primarily by an unusual volume of new apartment and dwelling construction undertaken for winter building in the New York and New Jersey districts. This question of building in the winter is discussed in an interesting manner in an article in THE FORUM Digest, which will be found in another section, and it is interesting to realize that the scientific consideration of the possibilities of winter building seems to indicate that costs are no greater and that an even distribution of building activity throughout the year is entirely logical. Building contractors and investors in New York are certainly demonstrating their belief in this theory by undertaking a vast volume of building.

Another reason for this sudden building activity



This chart shows a comparison of total new building construction by value and volume for the interesting years of 1921, 1922 and first 10 months of 1923. Trend lines are superimposed so that monthly comparisons may be made instantly

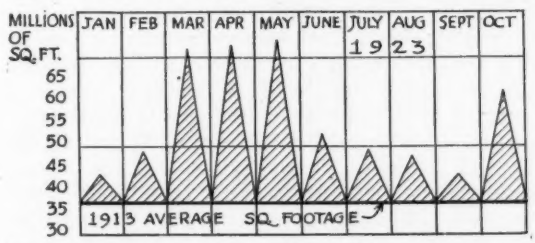
in New York is that large realty investors and speculators were waiting to see what conditions would develop in the fall rental market, particularly in high class apartment buildings. Practically all of these buildings filled up with tenants, many on two- and three-year leases and without any material reduction in rentals. As the result of this condition, many large contemplated projects were immediately undertaken for building during the winter to be ready for 1924 spring and summer occupancy.

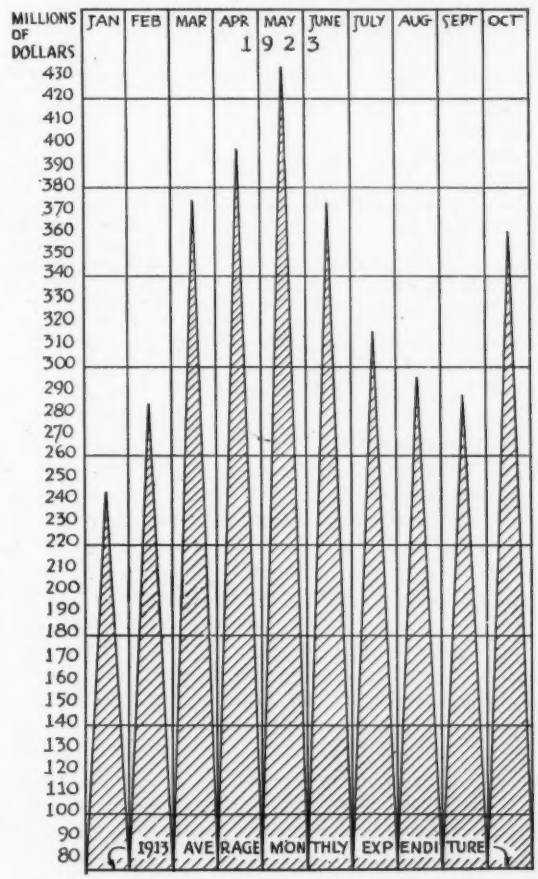
The confidence of loaning institutions continues unshaken, as indicated by the ease with which large building projects for 1924 are being financed. This confidence is based on a feeling of certainty that there will be no sharp decrease in the cost of building which might endanger collateral by establishing low replacement values. It is also evident that the investing public has great confidence in first mortgage bonds, because after a natural slowing down of mortgage bond investment during the summer of 1923, the fall showed a great increase in the amount of money flowing into the building field.

Another interesting consideration is indicated by the line (in the chart on the first page) showing the money value of contemplated construction as represented by the plans filed throughout the country. The month of October witnessed unusual activity in the filing of plans, which increased again in November. It will be noted in looking over past months and years on this chart, that whenever the value of contemplated construction shows high peaks, this is soon followed by a considerable increase in the number of contracts actually let. These factors would seem to indicate that there will be another phenomenal boom, this time probably starting earlier than in past years, because contracts must be let early in order to take advantage of the building material market.

At the present time the stocks of building material manufacturers and dealers are low, and the market is being drained by this unusual winter activity. Because of this situation there are serious dangers that the spring of 1924 will see again established chaotic conditions of unfilled orders and slow deliveries, with a probable rise in material prices. There are certain offsetting conditions which will probably relieve the situation as compared with the last two years. Production facilities of manufacturers have been increased to a certain extent and the railroad shipping conditions are much better. To a certain degree manufacturers are anticipating the heavy demands of the spring, and it may also be realized that the active program of winter building will serve to distribute the volume of activity.

On the second page of this article will be found a chart which provides a graphic comparison of total building activity for the past three years. This is shown both in actual money invested and in the volume of new buildings. The charts in the special color section following this article indicate a division of this activity. Thus, if an architect is discussing with a client the new hotel, office building or industrial building, it will be possible to trace the activity in each of these fields by referring to the charts covering the particular building type in question. These charts are presented on cross-section paper so that they may be easily read and also in order that additional lines may be plotted if the architect wishes to undertake an analysis of his own. The reading of these individual charts will show seasonal activity in the different building types and monthly comparison for the various years, all of which will help to determine the feas-



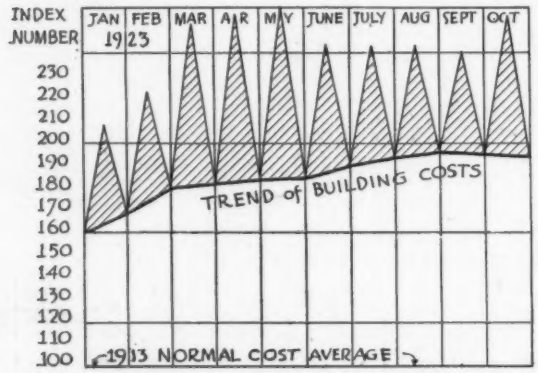


These charts show the monthly volume (left) and value (right) of new construction in 1923 in excess of the monthly average of the year 1913. This is a graphic comparison in which the difference in the size of triangles for each month represents the increased cost of building since 10 years ago

ibility of undertaking operations immediately, or at what season of the year such undertakings may seem logical.

Following is a brief consideration of some of the interesting points indicated in these individual charts:

Residential Building Investment. (Chart No. 6.) A glance at the various charts in this section indicates immediately the importance of residential construction which has constituted almost 40% of the building during these years. Residential construction as shown here includes not only dwellings, but apartment buildings and hotels, dwellings representing about one-half of the total. Beginning in January, 1921, it will be seen that the amount of money invested in residential construction has mounted from a monthly average of $31,000,000 in June, 1921, to the peaked month of March, 1923, in which con-



Plotting the monthly excess volume of building in 1923 (as compared with 1913) on a line indicating the increasing cost of building during 1923, we have a true picture indicating a comparison such as the months of January and September above—in these months the excess volume (represented by triangles) was almost equal, but increased costs show a much larger money expenditure

tracts let for new construction in this type amounted to over $165,000,000. The active periods for letting contracts were twice a year, the largest movement being in the spring and the secondary movement in the late winter. October, 1923, however, shows a much larger volume of contract letting as explained in previous paragraphs. This indicates a tendency toward a logical procedure of winter building and should encourage architects' clients to give serious consideration to this possibility. The chart shows a greater volume of residential building each year beginning in 1921, but that in the month of June, 1922, there was greater activity than in the same month in 1923.

Residential Building Volume. (Chart No. 13.) A comparison of the volume of residential building with the value as discussed above shows that the trend lines in both charts follow courses which are quite similar, which would seem to indicate that the activity in this field has been of a general nature, with no periods concentrated on particularly cheap or particularly expensive types of buildings. Otherwise there would be an average in the general trends of volume and money invested.

Commercial Building Investment. (Chart No. 7.) The lines on this chart indicate that the large volume of planning for office buildings and similar types is carried out through the winter and contracts are let somewhat later in the year than the residential building. The peak of activity is in the spring, and each year shows another active movement early in the fall, as it is evidently feasible to get large structures of this type under way in the early fall in order that they may be partially enclosed for the purpose of winter building.

Commercial Building Volume. (Chart No. 14.) The comparison of these charts shows more clearly a fluctuation due to the construction of expensive types of buildings. It will be noted that the line indicating the amount of money being spent in this class in 1922 passed above the line for 1923 in February. Comparing these lines in the volume chart it will be seen that this line did not pass above that of 1923 until April. This indicates that in 1922 the average type of commercial building was of a higher class and more expensive than during 1923.

Industrial Building Investment. (Chart No. 8.) This chart indicates that the amount of money spent for industrial building was considerably more in 1923 than in 1921. In 1922 an interesting period of activity is indicated in August and September, and again in May and June of 1923 there was considerable activity. September and October of 1923 show another increase in the letting of contracts for industrial buildings.

Industrial Building Volume. (Chart No. 15.) This chart indicates that the actual volume of industrial building gradually develops toward the middle of the year, subsiding again in the winter. The 1923 line shows slightly less volume in October than September, although the same line in the investment chart described above shows only a slight drop from August to September, although the investment chart shows a sharp increase in the amount of money spent which would indicate here that more expensive types of buildings have contributed to this increase.

In the same manner comparisons may be made in the other building fields indicated. Thus in hospitals and institutions (Charts Nos. 10 and 18) it will be seen that activity has been quite similar during the three years with various changes occuring in alternate months throughout 1921 and 1922, and a steadier line for 1923, which is almost an average of the activity of the two previous years.

Just as indicated in charts Nos. 12 and 19, the heavier periods of contract placement extend from May to August in every year. This would indicate a logical reason for letting contracts for church work earlier in the season when there is less competition in this particular class of highly specialized contracts and equipment.

Graphic Analysis of 3 Years of Building Activity

A Comparison by Volume and Investment of the Relative Activity During the Years 1921, 1922 and 1923 in Each of Seven Important Building Types, Representing 95% of the Total Construction Activity of the United States

THESE charts are completely explained in the accompanying article preceding this page. The purpose of the charts is to provide a complete comparative analysis of seven types of building activity during the years 1921, 1922 and 1923. In each chart the years are superimposed for the purpose of making rapid comparisons with building activity in any month. In order to facilitate the comparison of individual business with general trends in the building field, these charts have been carefully presented on cross-section paper, so that additional trend lines may be drawn using the units given for establishing a new vertical measure to fit the individual problem. Comparisons are given first, in the amount of money invested in seven types of new buildings, and, second, in the actual volume of new building construction in these seven types measured in total number of square feet involved in the letting of these new contracts.

The Money Which Has Been Invested in New Buildings

(A Series of Seven Charts Showing Comparisons for Three Years)

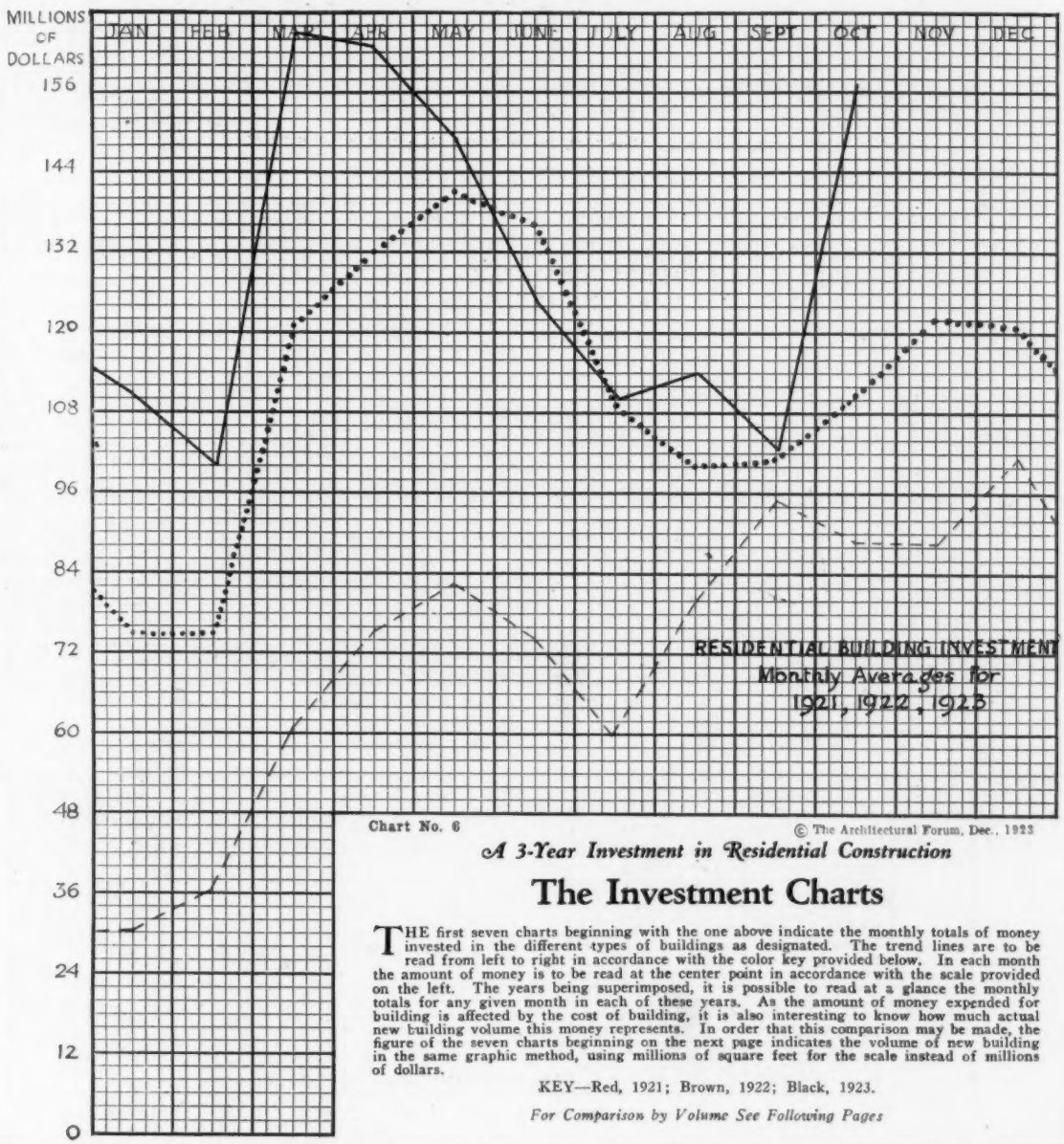


Chart No. 6

© The Architectural Forum, Dec., 1923

A 3-Year Investment in Residential Construction

The Investment Charts

THE first seven charts beginning with the one above indicate the monthly totals of money invested in the different types of buildings as designated. The trend lines are to be read from left to right in accordance with the color key provided below. In each month the amount of money is to be read at the center point in accordance with the scale provided on the left. The years being superimposed, it is possible to read at a glance the monthly totals for any given month in each of these years. As the amount of money expended for building is affected by the cost of building, it is also interesting to know how much actual new building volume this money represents. In order that this comparison may be made, the figure of the seven charts beginning on the next page indicates the volume of new building in the same graphic method, using millions of square feet for the scale instead of millions of dollars.

KEY—Red, 1921; Brown, 1922; Black, 1923.

For Comparison by Volume See Following Pages

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Graphic Analysis of 3 Years of Building Activity

(See Preceding Text for Full Explanation)

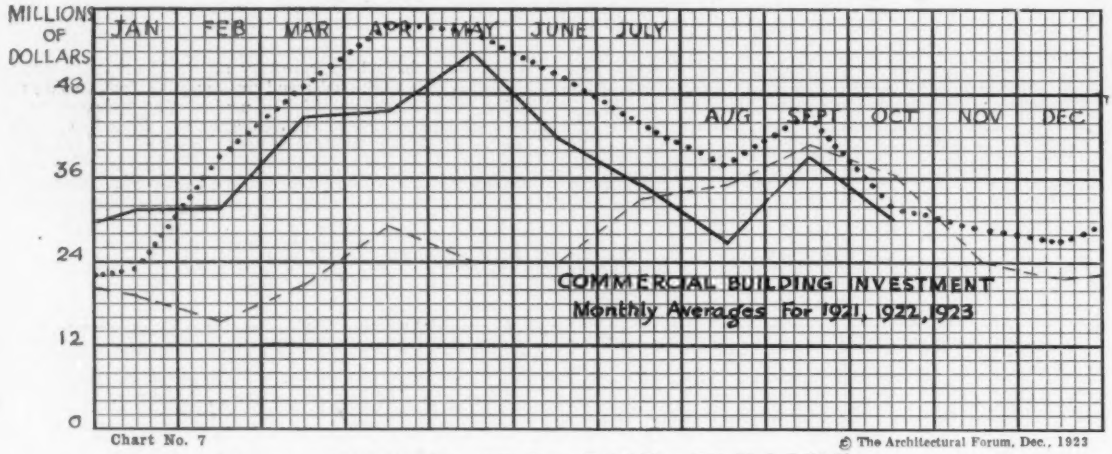

Chart No. 7 © The Architectural Forum, Dec., 1923

KEY—1921, Red Broken Line; 1922, Brown Dotted Line; 1923, Black Solid Line.

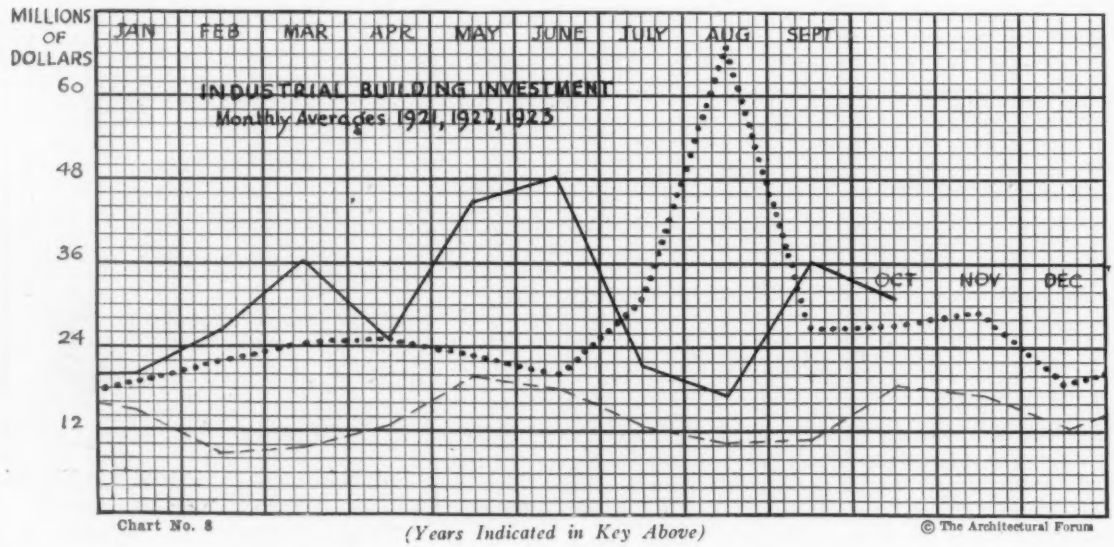

Chart No. 8 *(Years Indicated in Key Above)* © The Architectural Forum

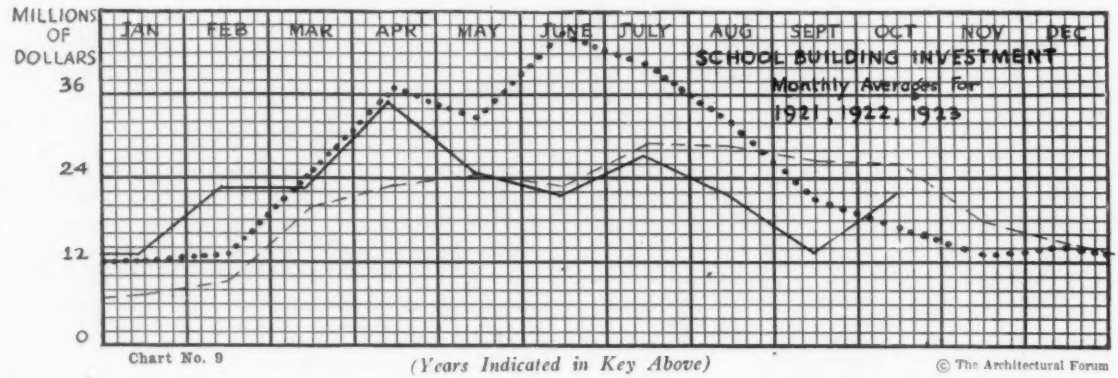

Chart No. 9 *(Years Indicated in Key Above)* © The Architectural Forum

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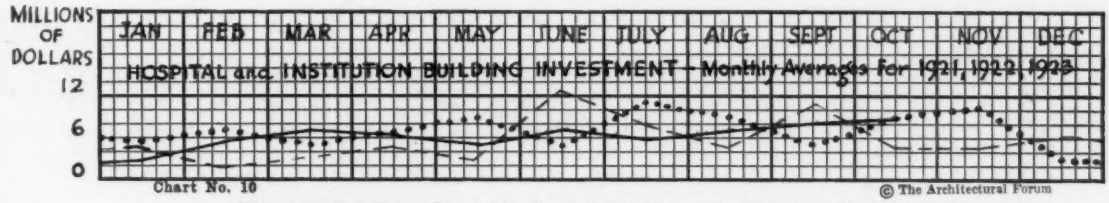
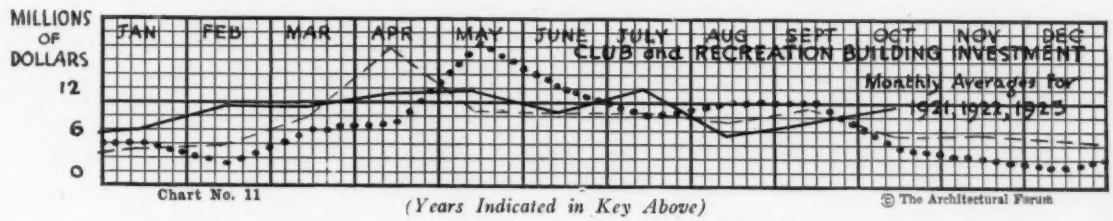
Graphic Analysis of 3 Years of Building Activity

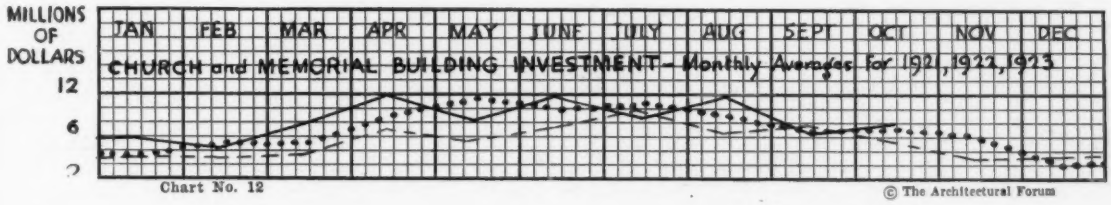
(See Preceding Text for Full Explanation)


MILLIONS OF DOLLARS
12
6
0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
HOSPITAL and INSTITUTION BUILDING INVESTMENT - Monthly Averages for 1921, 1922, 1923
Chart No. 10
© The Architectural Forum

KEY—1921, Red Broken Line; 1922, Brown Dotted Line; 1923, Black Solid Line.

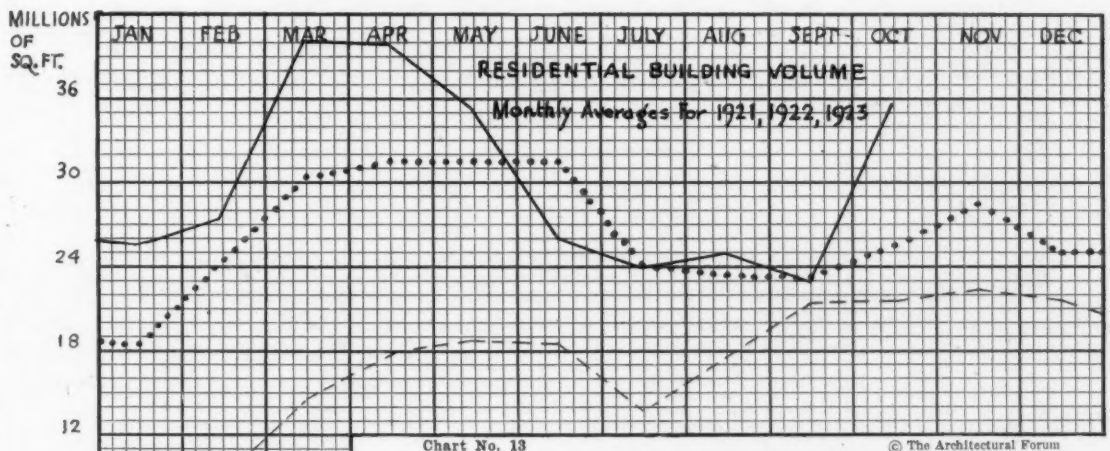

MILLIONS OF DOLLARS
12
6
0
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
CLUB and RECREATION BUILDING INVESTMENT
Monthly Averages for 1921, 1922, 1923
Chart No. 11
© The Architectural Forum

(Years Indicated in Key Above)


MILLIONS OF DOLLARS
12
6
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
CHURCH and MEMORIAL BUILDING INVESTMENT - Monthly Averages for 1921, 1922, 1923
Chart No. 12
© The Architectural Forum

The True Picture—Structural Volume of New Buildings

(A Series of Seven Charts Showing Comparisons for the Three-Year Period)



THE VOLUME CHARTS

THESE charts indicate the true physical picture of building activity, as the points in each month are measured on a basis of the number of square feet involved in new contracts in these seven building types. In the preceding charts the measure is given in dollars invested in new buildings.

KEY—Red, 1921; Brown, 1922; Black, 1923.

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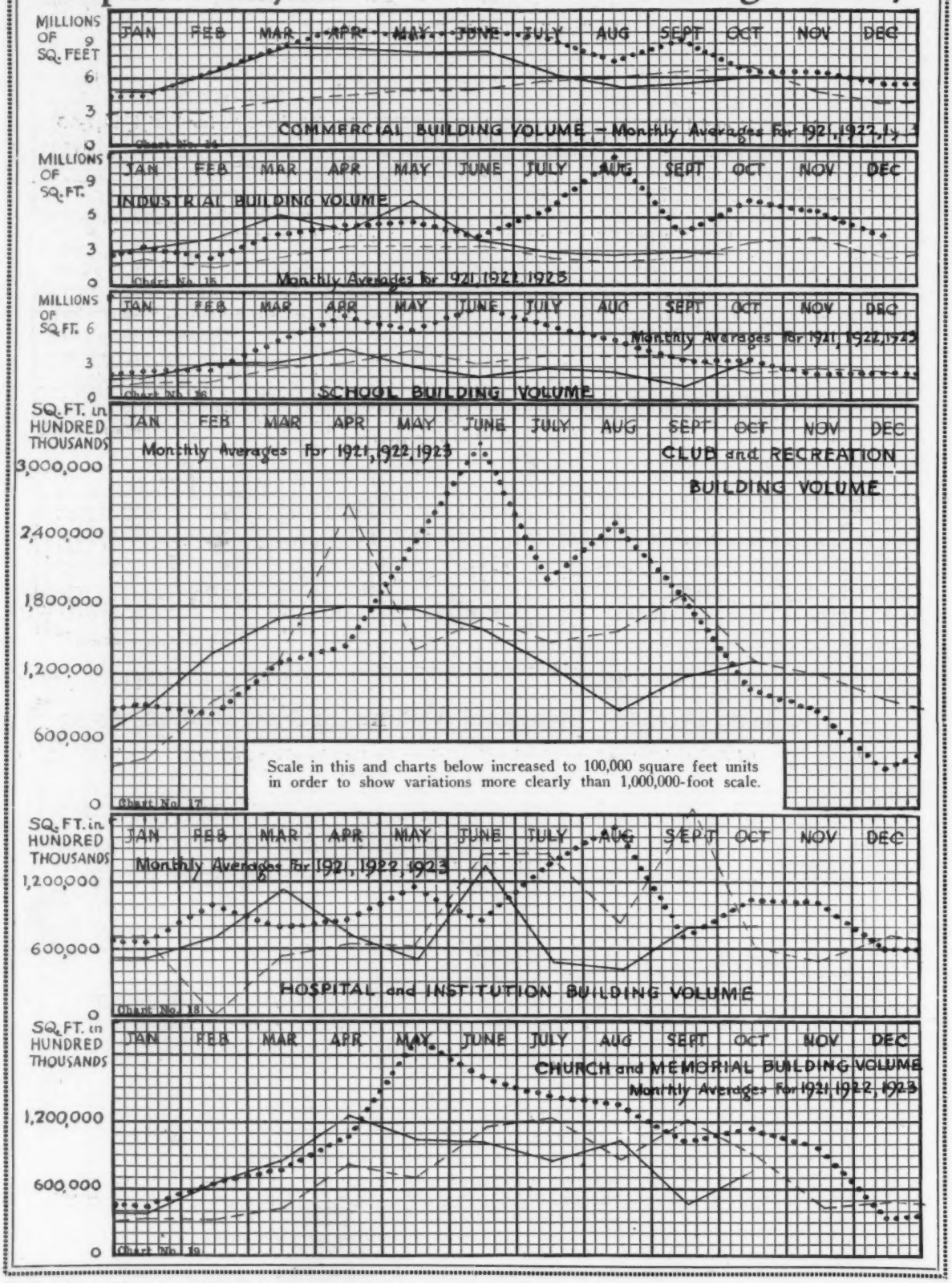
Graphic Analysis of 3 Years of Building Activity


MILLIONS OF SQ. FEET
JAN FEB MAR APR MAY JUNE JULY AUG SEPT OCT NOV DEC
COMMERCIAL BUILDING VOLUME — Monthly Averages for 1921, 1922, 1923
Chart No. 16
MILLIONS OF SQ. FT.
INDUSTRIAL BUILDING VOLUME
Monthly Averages for 1921, 1922, 1923
Chart No. 15
MILLIONS OF SQ. FT.
SCHOOL BUILDING VOLUME
Monthly Averages for 1921, 1922, 1923
Chart No. 18
SQ. FT. in HUNDRED THOUSANDS
3,000,000
2,400,000
1,800,000
1,200,000
600,000
0
CLUB and RECREATION BUILDING VOLUME
Monthly Averages for 1921, 1922, 1923
Scale in this and charts below increased to 100,000 square feet units in order to show variations more clearly than 1,000,000-foot scale.
Chart No. 17
HOSPITAL and INSTITUTION BUILDING VOLUME
Monthly Averages for 1921, 1922, 1923
Chart No. 18
CHURCH and MEMORIAL BUILDING VOLUME
Monthly Averages for 1921, 1922, 1923
Chart No. 19

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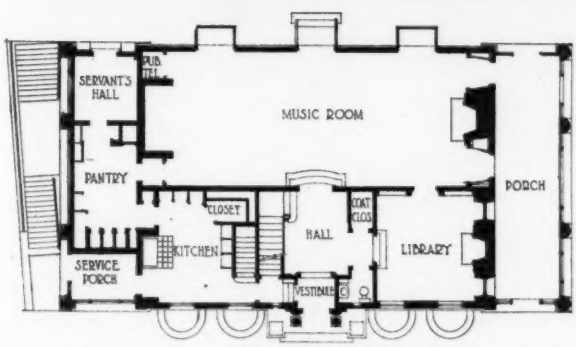
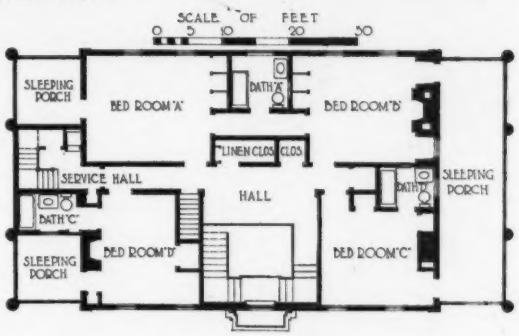
GENERAL VIEW OF STREET FRONT



FIRST FLOOR PLAN

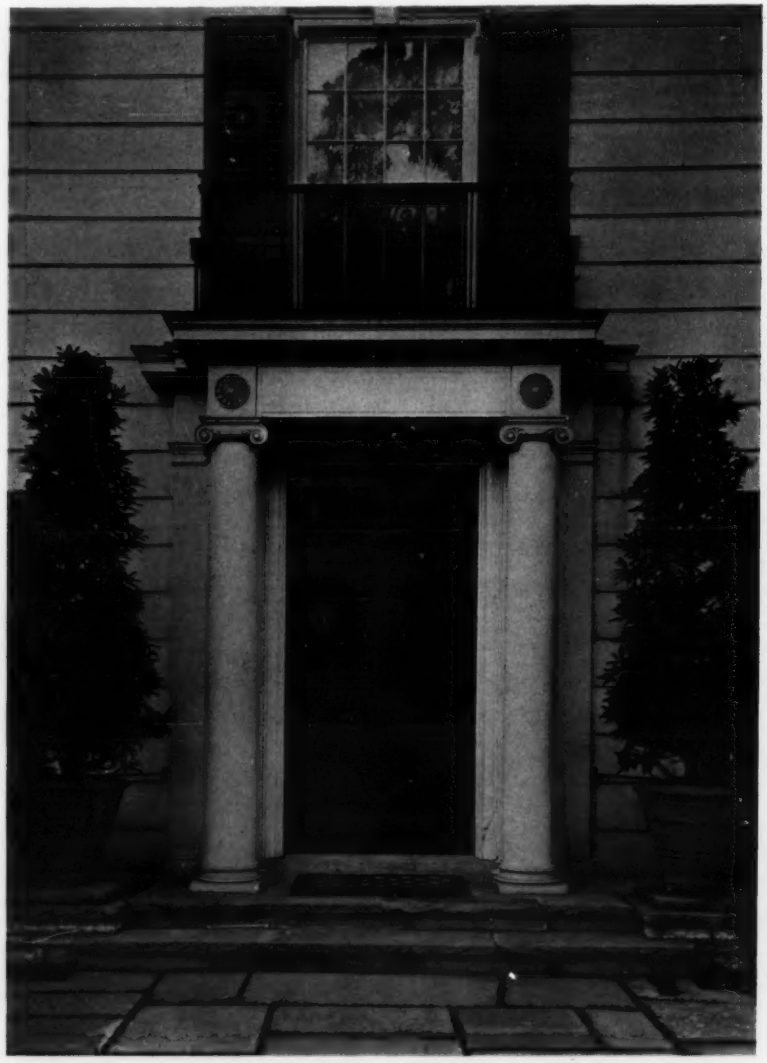


SECOND FLOOR PLAN

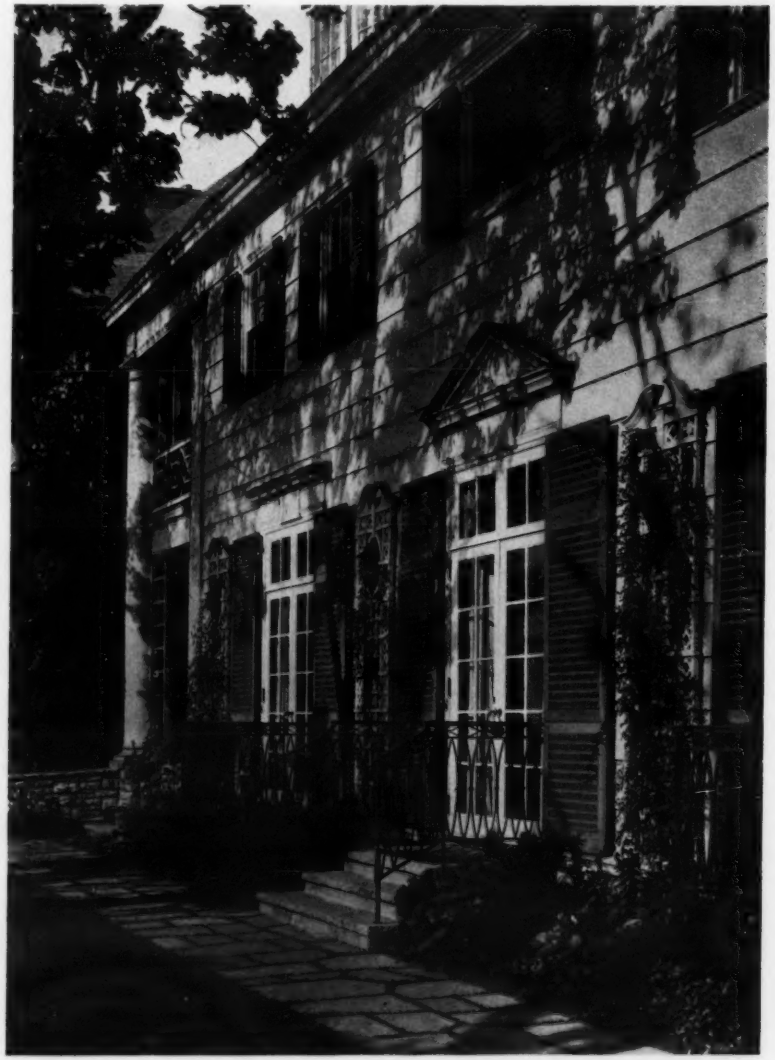
HOUSE OF GEORGE F. LINDSAY, ESQ., ST. PAUL

PARKER, THOMAS & RICE, ARCHITECTS

Architectural
Library



DETAIL OF MAIN ENTRANCE



DETAIL OF GARDEN FRONT

HOUSE OF GEORGE F. LINDSAY, ESQ., ST. PAUL

PARKER, THOMAS & RICE, ARCHITECTS

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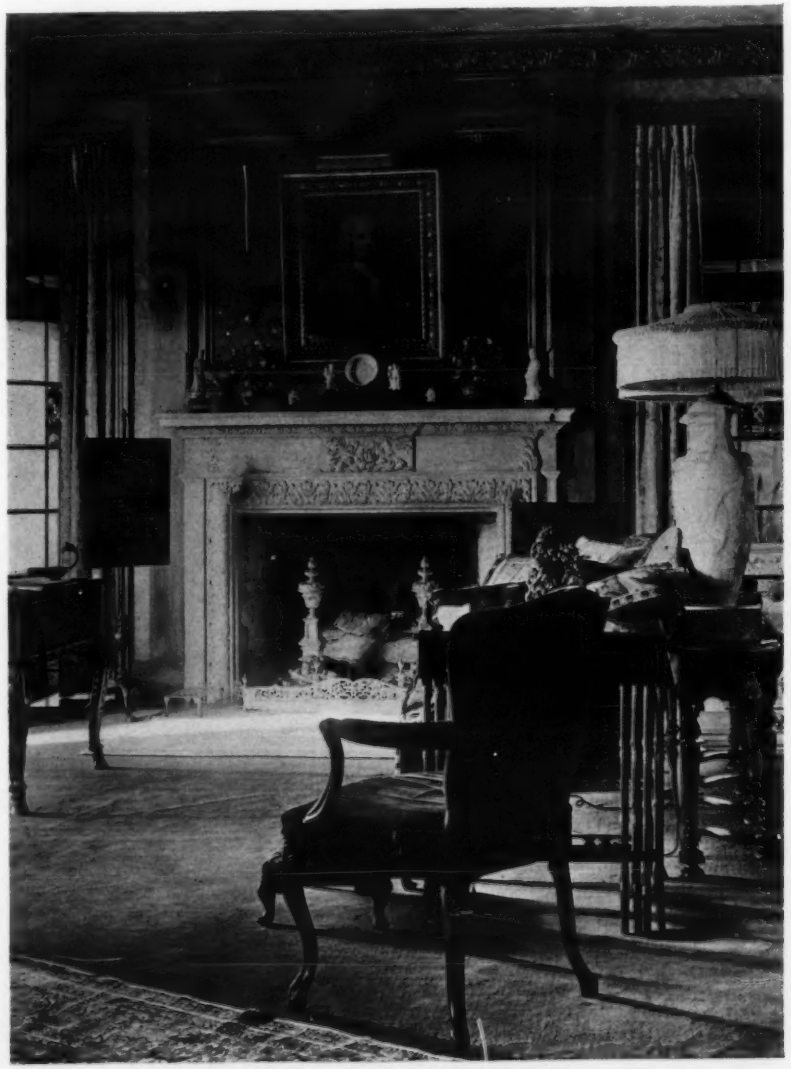
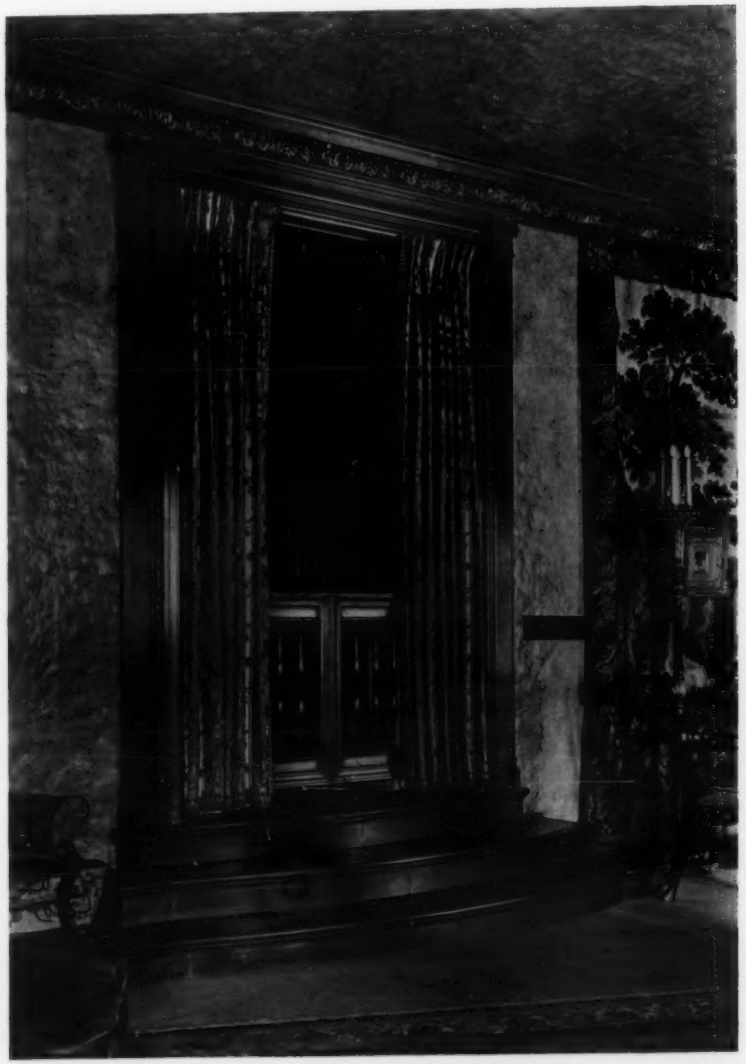


FIREPLACE END OF MUSIC ROOM



DOORWAY TO HALL FROM MUSIC ROOM

HOUSE OF GEORGE F. LINDSAY, ESQ., ST. PAUL

PARKER, THOMAS & RICE, ARCHITECTS

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TWO VIEWS OF THE GARDEN

HOUSE OF GEORGE F. LINDSAY, ESQ., ST. PAUL

PARKER, THOMAS & RICE, ARCHITECTS

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VIEW FROM APPROACH

VIEW SHOWING SERVICE WING

HOUSE OF J. AVERELL CLARK, ESQ., WESTBURY, NEW YORK

PEABODY, WILSON & BROWN, ARCHITECTS

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DINING ALCOVE

ENTRANCE DETAIL

HOUSE OF J. AVERELL CLARK, ESQ., WESTBURY, NEW YORK

PEABODY, WILSON & BROWN, ARCHITECTS

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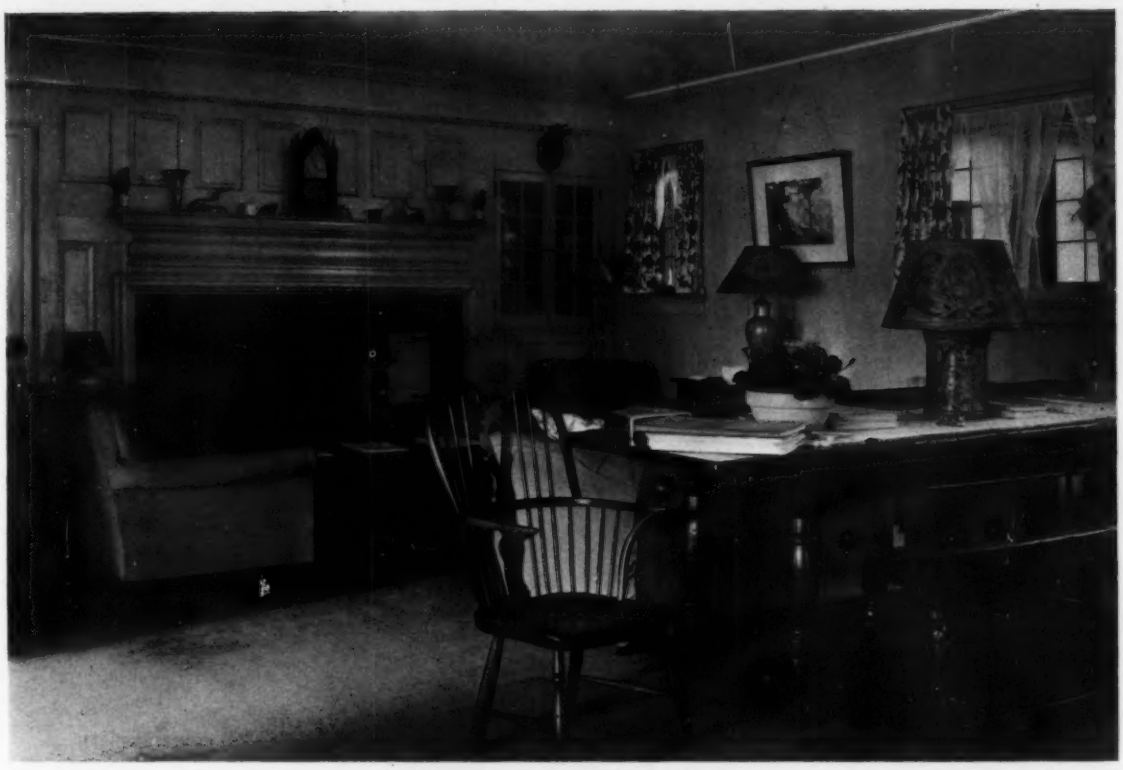
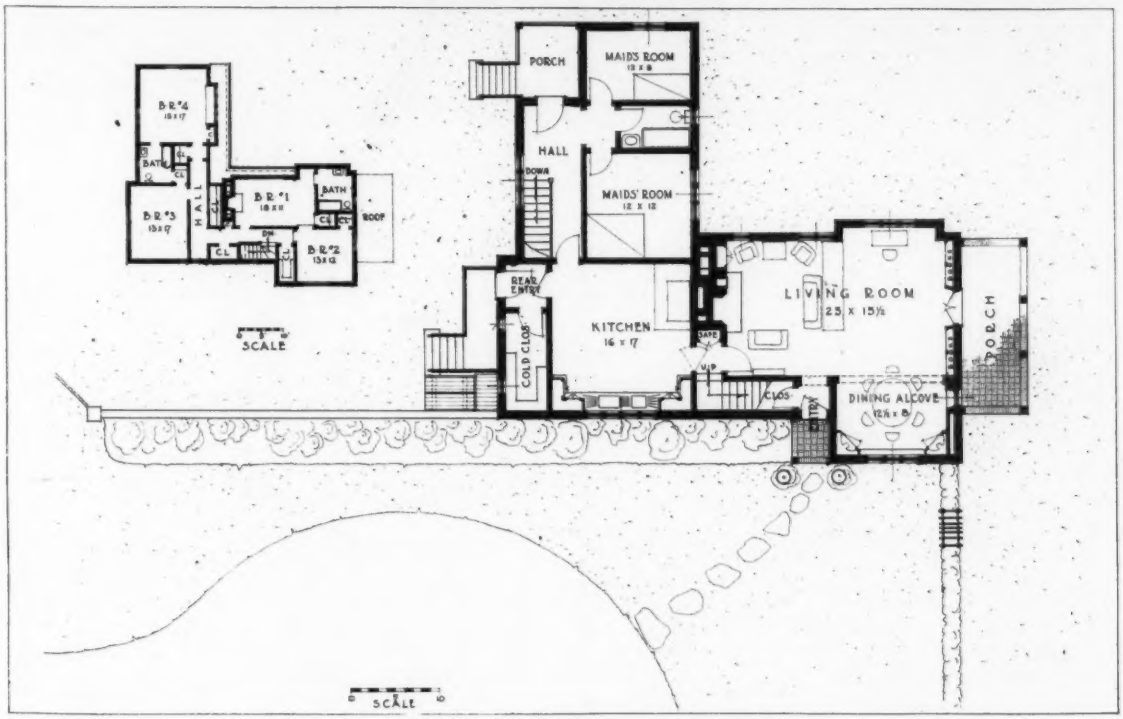


FIREPLACE END OF LIVING ROOM

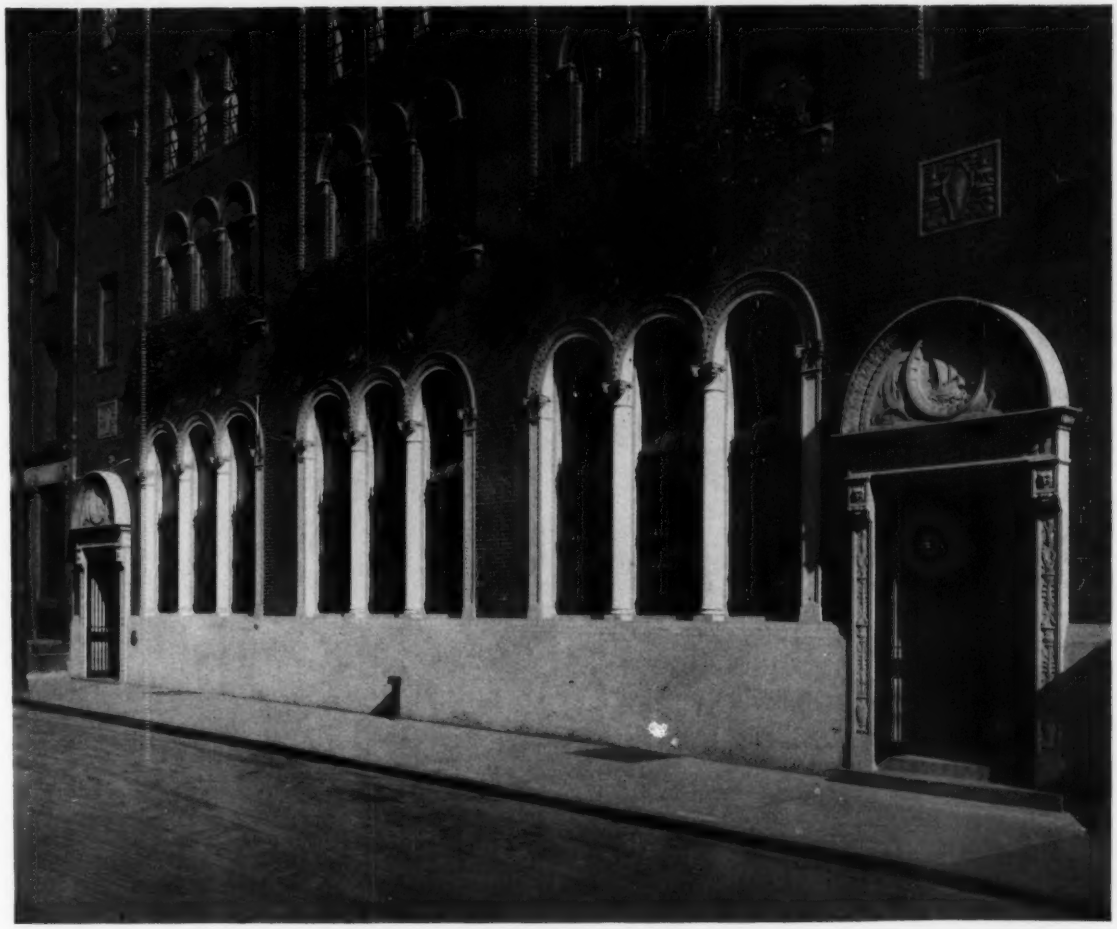


FIRST AND SECOND FLOOR PLANS

HOUSE OF J. AVERELL CLARK, ESQ., WESTBURY, NEW YORK

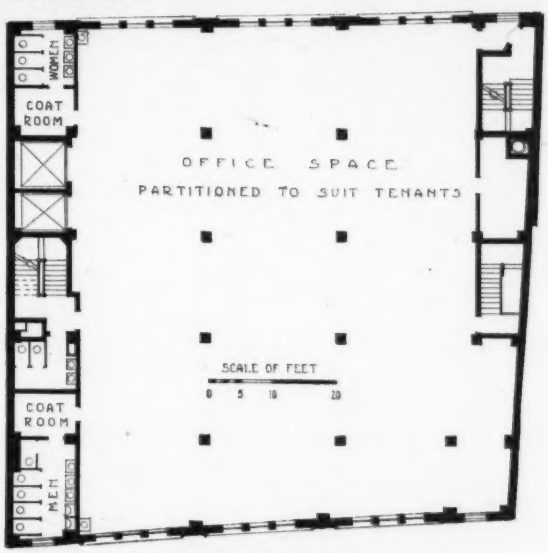
PEABODY, WILSON & BROWN, ARCHITECTS

Architectural
Library



DETAIL OF LOWER STORIES

FIRST FLOOR PLAN



TYPICAL FLOOR PLAN

TERMINAL WAREHOUSE, 31 SOUTH WILLIAM STREET, NEW YORK

JAMES W. O'CONNOR, ARCHITECT

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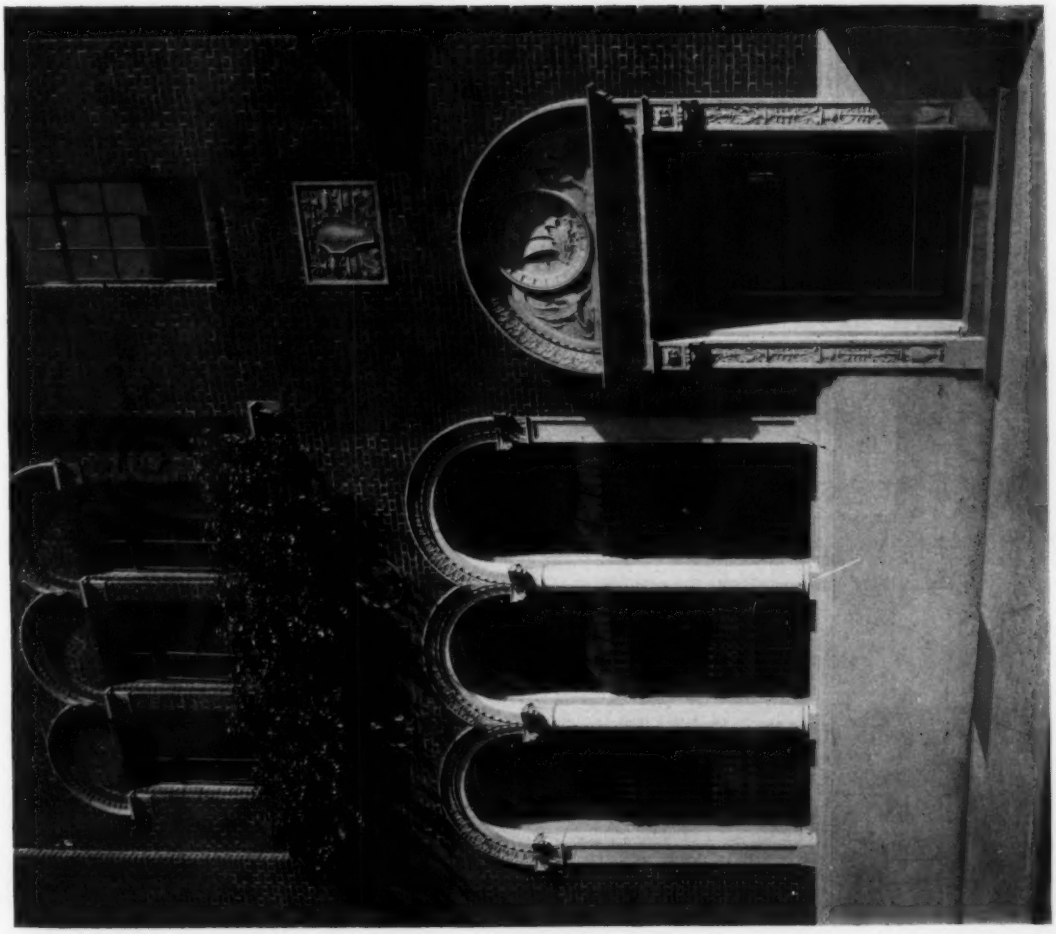
GENERAL EXTERIOR VIEW



DETAIL OF ENTRANCE

TERMINAL WAREHOUSE, 31 SOUTH WILLIAM STREET, NEW YORK

JAMES W. O'CONNOR, ARCHITECT

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Plate Description

OAKLAND GOLF CLUB, BAYSIDE, N. Y. Plates 97-101. Conditions were favorable in the case of the Oakland Golf Club, of which Roger H. Bullard is architect, for creating an interesting group of buildings. The type selected is that of the early American farmhouse, developed in a combination of shingles and field stone, both whitewashed, with roofs of moss-colored tiles, the grouping and composition being very much aided by the various retaining walls of stone which are necessary for providing upon rolling ground an area sufficient for buildings and dependencies so extensive.

The structure is fireproof, notwithstanding its shingled exterior walls, for the shingles are backed with hollow tile construction. The L-shaped plan of the building conforms to the character of the site, the main portion of the building having a southerly exposure overlooking the golf course. The service wing extends toward the north, with ample parking facilities at the main entrance court, traffic passing under the service wing and around this to the north to a lower parking level. In the basement provisions have been made for chauffeurs' sitting room, dining room, etc., with entrance from the service court. The second floor includes women's locker rooms over the lounge, card rooms over the dining room, and steward's room over the service wing.

The interior treatment is broad in its handling, with heavy ceiling beams and trusses of hand-hewn timber and boldly simple fireplace facings of limestone. Walls are in many instances treated in plaster applied in a free and irregular way as though on masonry, and then toned down by the application of wax glazed. The construction of the building makes possible window reveals of some depth, and excellent use has been made of the decorative opportunities by using red tile for the sills. A great part of the interest of the interior is due to the excellent taste which has guided the selection of furniture and accessories of every kind, which are an aid in giving character to the building.

HOUSE OF GEORGE F. LINDSAY, ESQ., ST. PAUL. Plates 104-107. The popularity of the sleeping porch presents difficulties in the way of architectural composition which are not always as successfully solved as in this instance where it has been treated in the only consistent and logical way,—by regarding it as a part of the structure proper and not as an appanage. Here the architects, Parker, Thomas & Rice, have incorporated ample porches, upper and lower, at the ends of the house, treating them as integral parts of the body of the structure and extending the roof over them, thus adding materially to the width of the house and increasing the excellence of its proportions.

Exterior walls are covered with wide clapboards, and wood shingles are used upon the roofs. Much of the beauty of the exterior is the result of using gracefully designed wrought iron in the guards about windows and in the rail at the sides of the French window which opens from the music room upon the stone flagged terrace. Probably with a view to securing upon the lower floor one room of unusual size instead of two or more smaller rooms, considerable area has been given to the music room, one end of which, since it opens from the service quarters, can be made to do duty as a dining room. Upon the upper floor each of the four bedrooms opens upon a sleeping porch.

HOUSE OF J. AVERELL CLARK, ESQ., WESTBURY, N. Y. Plates 108-110. With its excellent composition and rambling form, graceful roof surfaces, clustered chimneys and excellent use of walls to enclose gardens and service quarters, this house suggests an American adaptation of the "modern English style." The building is of stucco of moderate texture, whitewashed. The chimneys are of brick, also whitewashed, while the roofs are of wooden shingles, stained. The wall about the service portion of the house is, like the building itself, of stucco, whitewashed. What little wood trim is visible upon the exterior, is of oak which has been allowed to weather.

The plans of the house, of which the architects are Peabody, Wilson & Brown, illustrate a tendency which for several years has been noticeable in American country and suburban house building,—a tendency to minimize the number and sizes of the rooms on the lower floor to make possible the placing there of the necessary maids' rooms, thus leaving the entire upper floor for master bedrooms. Here the lower floor includes a living room of generous size, while the conventional dining room has been omitted, its place being taken by a "dining alcove."

TERMINAL WAREHOUSE, 31 SOUTH WILLIAM STREET, NEW YORK. Plates 111, 112. That the value of good architecture is not entirely overlooked, even for structures which are not often regarded as presenting many opportunities for the exercise of care and skill in design, is being proved by the excellent designing being done for many structures of a strictly utilitarian nature. A case in point is this building, near the lower end of Manhattan Island, of which James W. O'Connor is architect.

The facade, eight stories high, is of brick with ornament of limestone about the doorways and windows of the two lower floors and the windows of the upper story. The structure has been planned for the storage of documents. The left half of the ground floor as one enters the building is occupied by the owning company; the remainder of this floor is leased to a single tenant, while each of the floors above is occupied by some individual tenant. The building is of steel construction, the facade as already said being of brick and stone; floors are of cement treated with a hardener.

EDITORIAL COMMENT

THE ARCHITECT AND CRAFTSMANSHIP

WE are wont to complain of the lack of craftsmanship in modern building practice, and it is true that by and large it is seriously lacking; yet do we readily recognize higher standards of workmanship when they do come to light today, and do we take sufficient advantage of opportunities for securing good architectural effects that are offered us in new materials and methods of construction?

Concrete construction is an instance. Its use structurally has been perfected within the time of the present generation, and within only the last few years has it been sufficiently developed with surface treatments to warrant its being considered a material suitable for architectural expression.

The memorial bridge at Wilmington, illustrated in this issue of THE FORUM, is an example of modern craftsmanship in a modern material. The entire structure is of reinforced concrete, and the whole exterior surface is likewise of concrete, poured in place with the exception of the balustrade, which was assembled from pre-cast concrete units. The surfaces display a range of finishes from simple carborundum rubbing on the soffits of the large arch ribs to a highly developed granite aggregate surface on the superstructure that has the appearance of being of stone and yet does not masquerade as stone, because the absence of joints and the simple character of ornament suggesting the wood forms with which it is made proclaim it to be monolithic. The architectural forms are classic and naturally suggestive of stone masonry; their construction in concrete has, however, not been overlooked, and they are greatly simplified to make them easy of manipulation with wood forms.

Architecture, unlike the other fine arts, cannot be created in tangible form by the artist who conceives it; the idea which the architect sets down on paper must be interpreted in varied materials by many and diverse kinds of workmen, building under the architect's supervision, before any work of architecture is completed. The possibilities of disappointment in the visual effect of materials, in the technique of building whereby certain expected textures are not developed, are legion and serve to indicate the powers of visualization that the architect must possess and exercise.

The selection of materials presents as much difficulty as any feature of architecture. Successful handling of material demands of the architect the power to judge from a small detached sample the effect of a large mass of material in the completed building, affected as the final appearance is by the important considerations of scale, color, and texture.

The close and intense study of mediæval and renaissance architecture that American architects have engaged in during the last 20 years has revived in us respect for the physical attributes of materials; we have learned that a brick building must claim interest first because of the character of its walls; that a stucco building must be of interest for the textured surfaces it displays; that a stone building must indicate that it is built of a natural material, with the slight variations of grain and color that a natural material possesses in evidence. Architectural beauty differs from natural beauty in that it is the result of a conscious effort to create beauty; it is governed by more or less defined laws of composition; it is artificial in nature, yet without adopting the sentimentalism of Ruskin it should not attempt to conceal the natural beauty of the materials that make it. Today, with the cost of construction exercising so strong an influence on architecture, it is of the greatest importance that the full beauty of materials be realized, because there is but little opportunity to fall back on use of ornament and elaborate architectural motifs.

Architects generally recognize this; the reason that evidence of it in finished buildings is so slight is that the building trades worker is still laboring under the delusions of the Victorian period of building, when the award of excellence was given to mechanical accuracy; the machine product age took away from the workman every artistic interest in the qualities of the material with which he worked; any effort that was made to recognize physical qualities of materials was always in the wrong direction, as witness the hideousness of polished golden oak.

Manufacturers, in the main, are similarly affected in their production by temporary and popular influences, irrespective of their being good or bad fundamentally. The manufacturer under present economic conditions must of necessity be governed by popular demand; much as he may appreciate better things than the normal market offers, he cannot be expected to spend his capital in an altruistic educational effort; he must make what his experience shows him will sell. On the architect, therefore, rests the whole responsibility for creating architecture. He must not alone conceive the design, but he must also expend his energy in developing a live interest in true and honest building methods, encourage the efforts of intelligent manufacturers, and give advice when possible to those laboring under false standards. Just as keen, live coöperation between designer, contractor and workman has developed concrete, so will the same effort build up standards of craftsmanship in the manufacturing and fabrication of all building materials. The effort is large, but the joy in creating a work of architecture is sufficient compensation.

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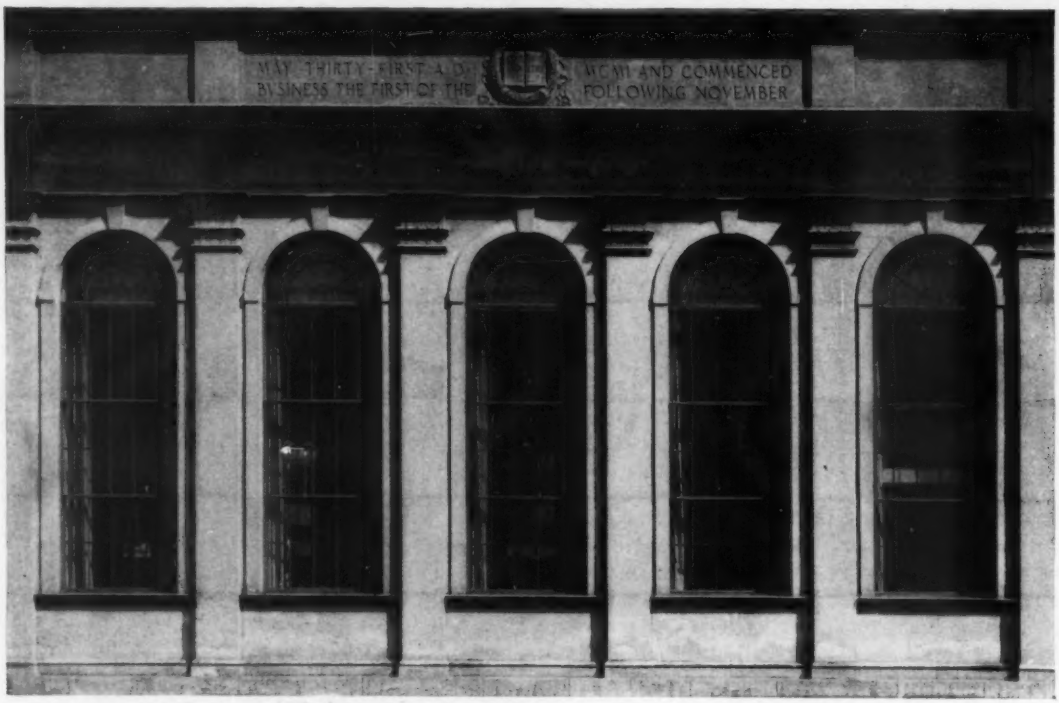

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Alfred Hopkins, Architect
Fred T. Ley, General Contractor

Exterior view at top of page

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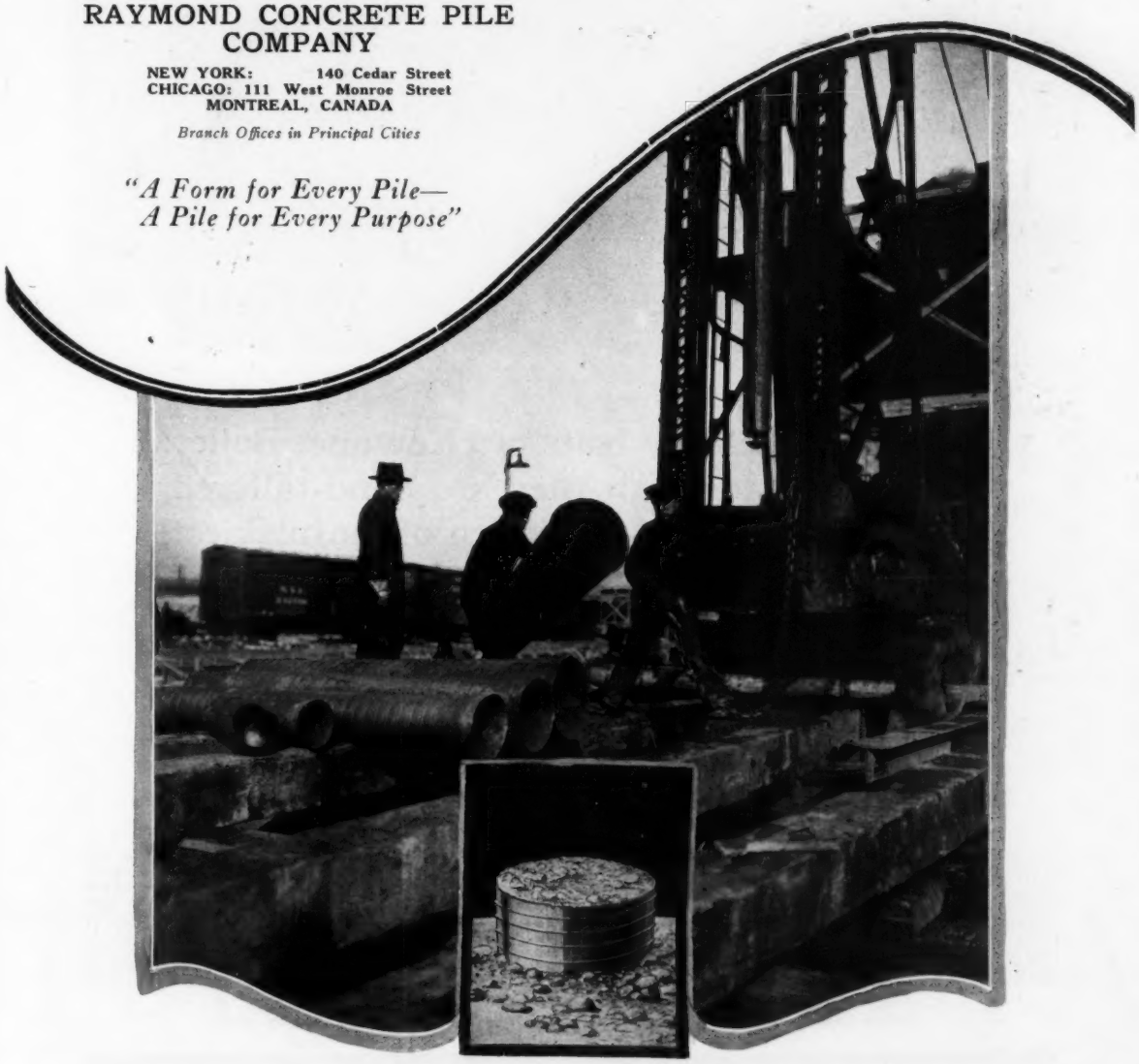

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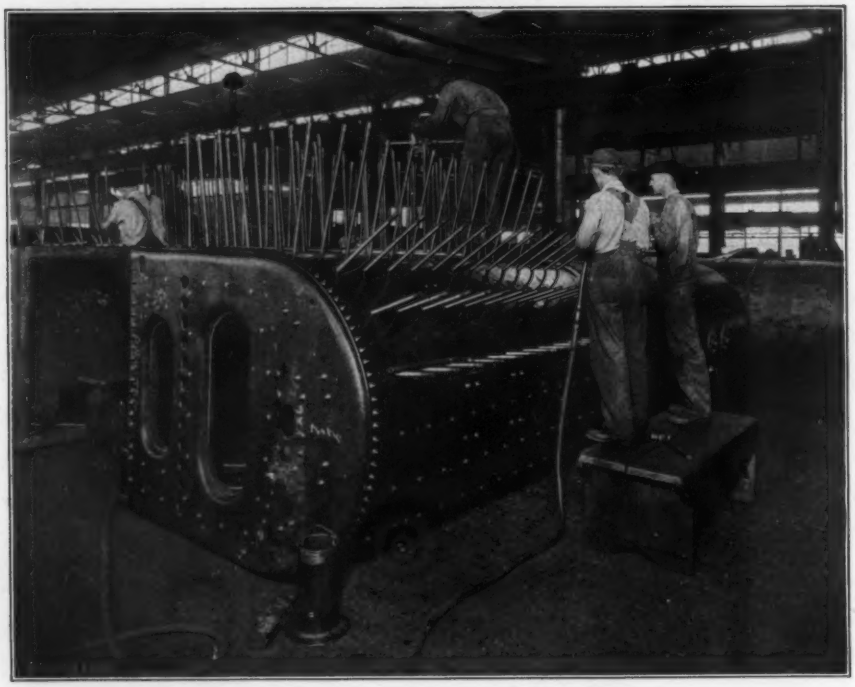

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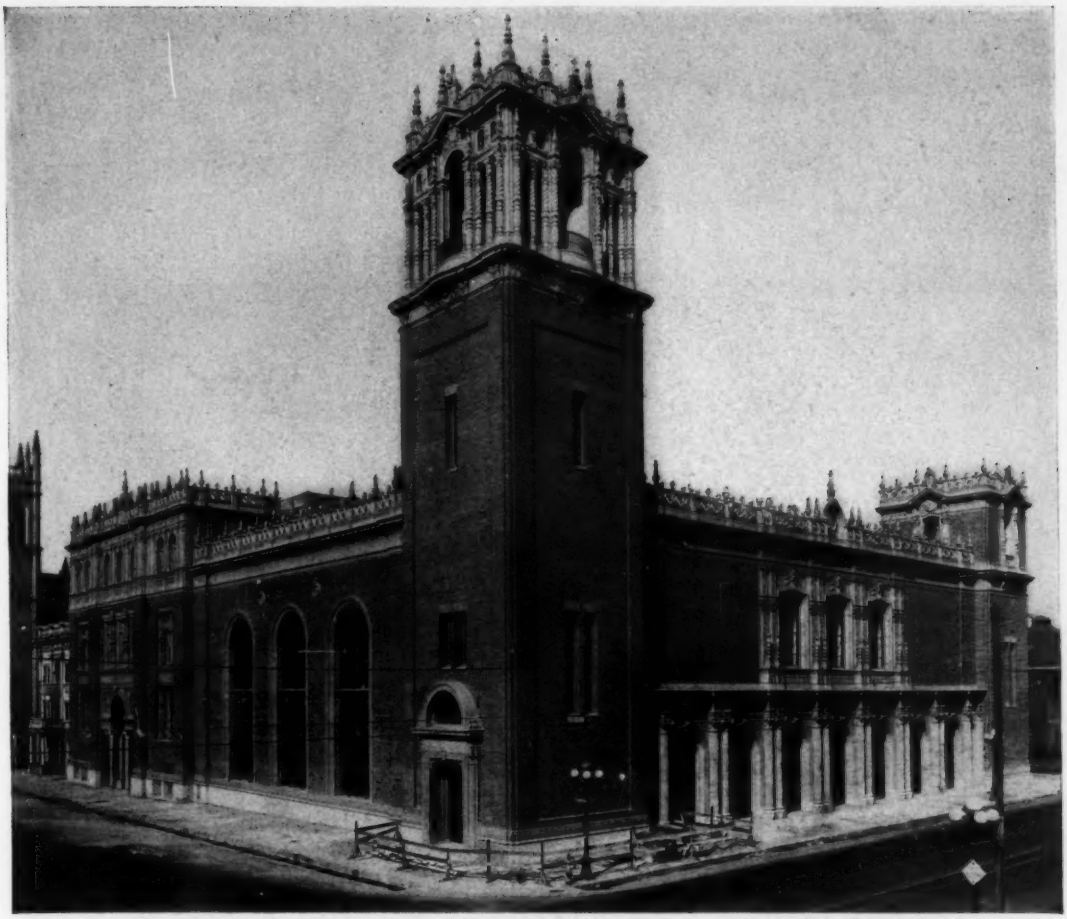

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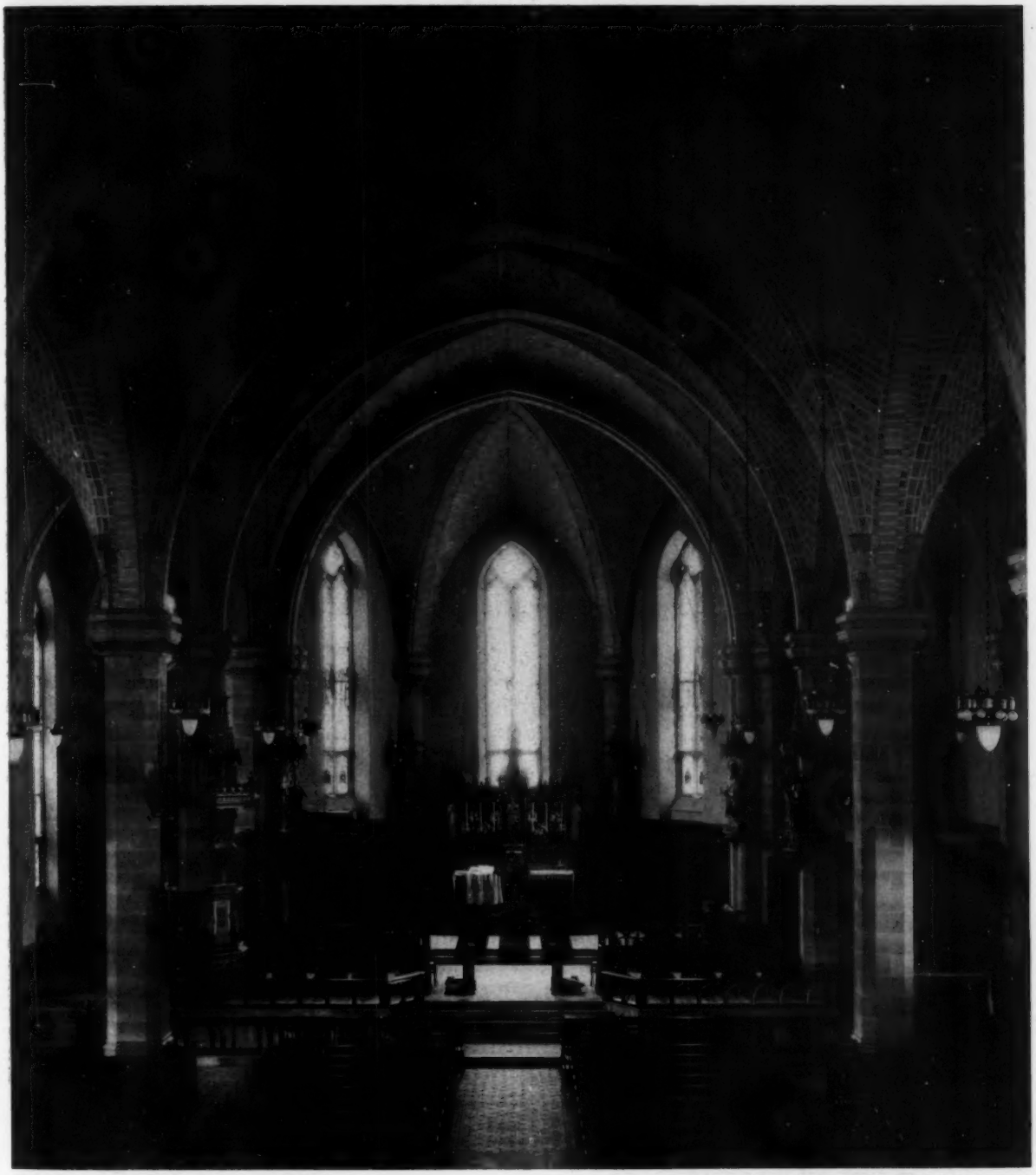

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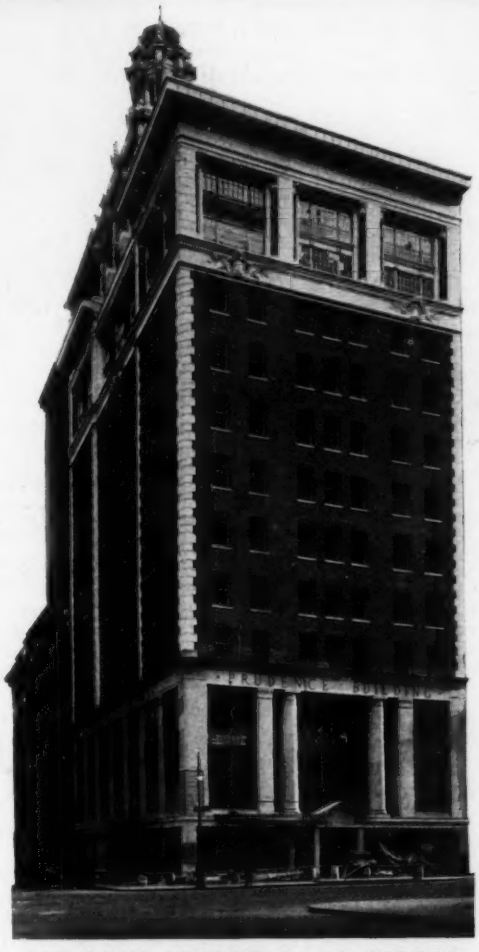

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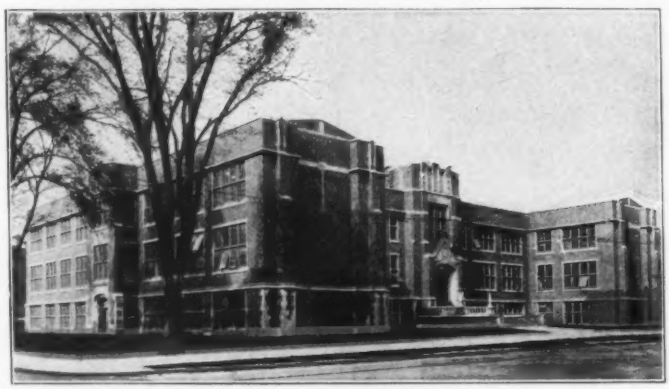

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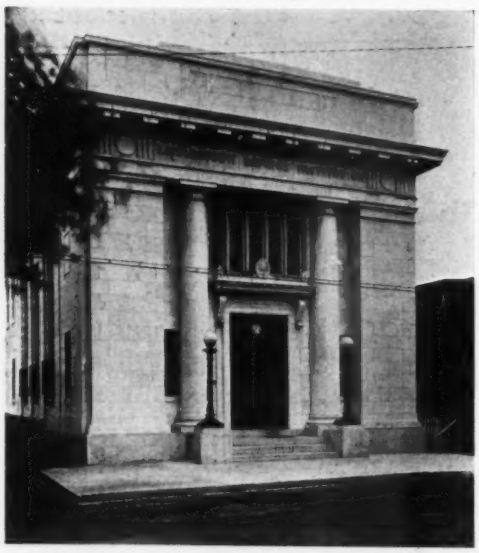

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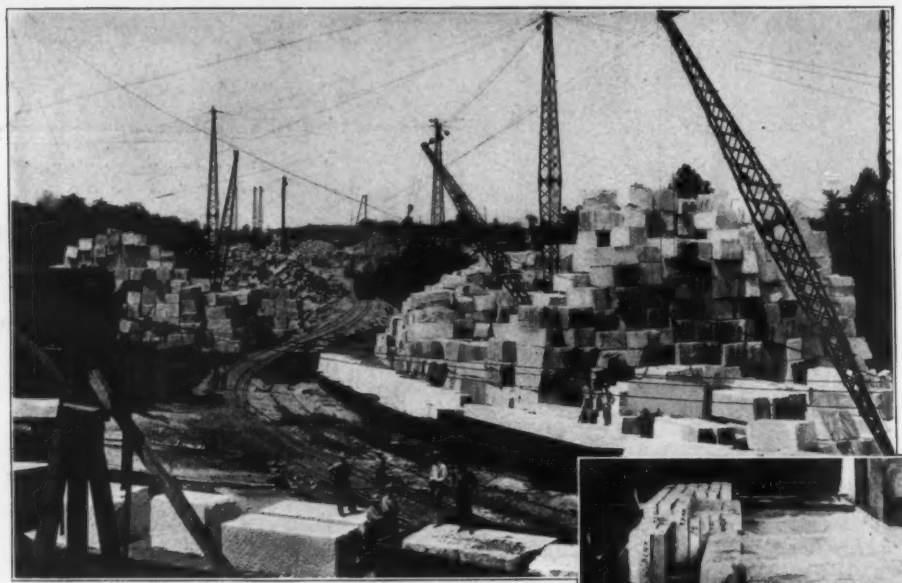

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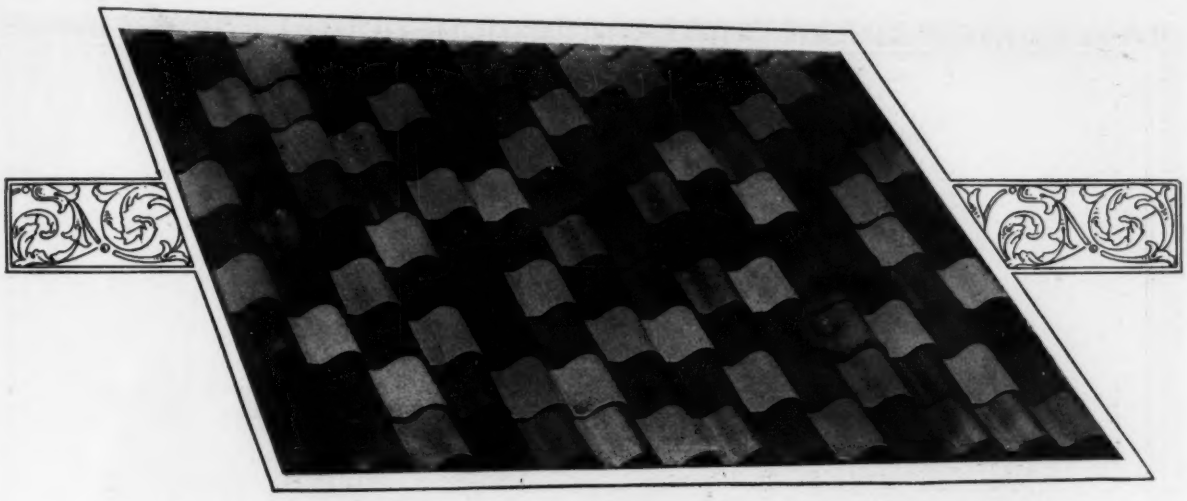

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Above is pictured the residence of Mr. E. J. Lennox, Architect, at Toronto, Canada. This structure is roofed with our IMPERIAL Spanish Tiles, in a mixture of red and fireflashed colors. An unusually good range of shade has been secured, which on this type of architecture produces a striking effect.

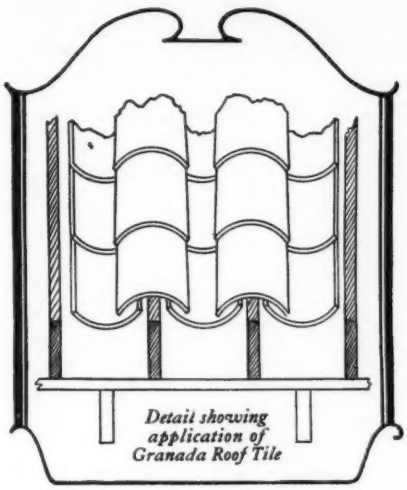
Surely your clients are deserving of a roofing material which you and your fellow architects instinctively know to be the best.

IMPERIAL

Spanish Tiles

LUDOWICI-CELADON COMPANY

104 South Michigan Boulevard - Chicago, Ill.



Detail showing application of Granada Roof Tile

Varicolor Granada Roofing Tile

BEAUTY is enhanced, monotone is relieved, colorful life is added, by the use of Varicolor Granada Roofing Tile.

Widely varying tastes, as well as the most elusive color schemes, may be followed with harmonious blending of diversified colors, ranging from the medium and dark shades of red to the rich purples, and from warm, golden hues to the metallic blue of gun metal.

Durable—fireproof—a non-conductor of heat and cold.

"The Standard of Quality in Clay Products"

L.A. Pressed Brick Co.

Los Angeles, California

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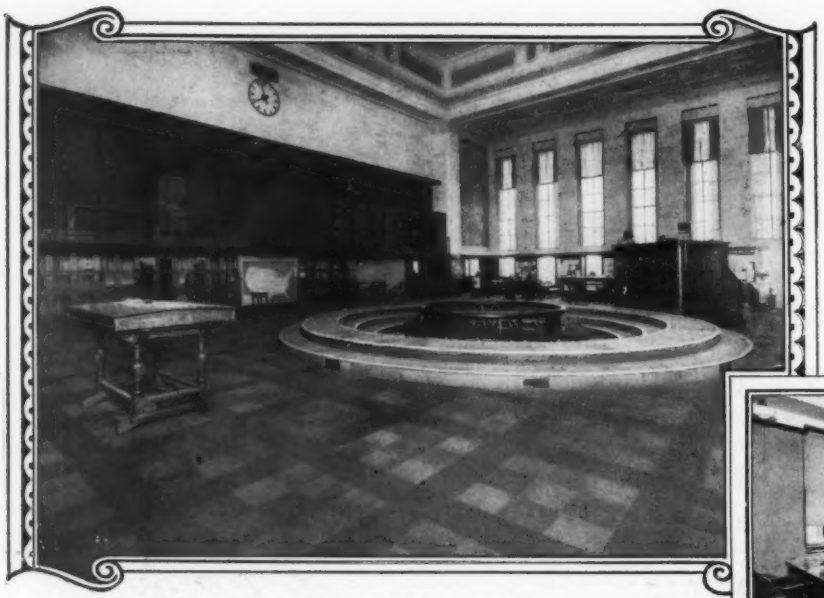

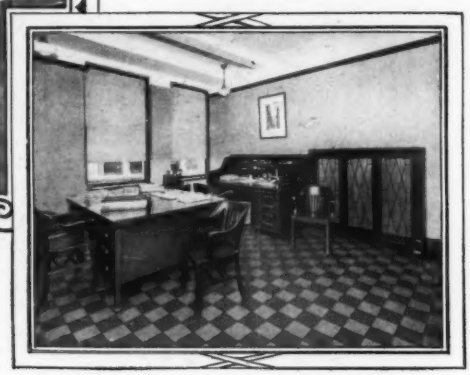

Views of the Cotton Exchange Building, New York. *Architect:* Donn Barber, New York.
Throughout the building are used Gold-Seal Treadlite Tile, Gold-Seal Battleship Linoleum, Gold-Seal Rubber Tile and Gold-Seal Cork Tile.
Above: Trading floor of the Exchange. *Right:* Private office, W. R. Craig Co., Cotton Exchange Building.

Harmonious Floors

As a Factor in the Decorative Plan

Happily, floors are no longer considered merely in the light of their utilitarian qualities. Today, the architect views them as an integral part of his decorative scheme, as important in their way as the walls and woodwork.

Added to the other essential features of comfort, quiet, and durability, you have in Bonded Floors a considerable latitude of *suitability.*

In such variety of material and designs that they are adaptable to almost any interior, Bonded Floors lend themselves admirably to the architect's plan for a harmonious whole. And our designers are always at your disposal to help in selecting the type and design of floor best suited to individual requirements.

We will send literature descriptive of Bonded Floors, as well as specifications and details, upon request.

"A Surety Bond with Every Floor"

To protect your client's floor investment—require the contractor to furnish a five-year guaranty and to back that guaranty with a *surety bond.*

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Division of Congoleum Co., Inc.
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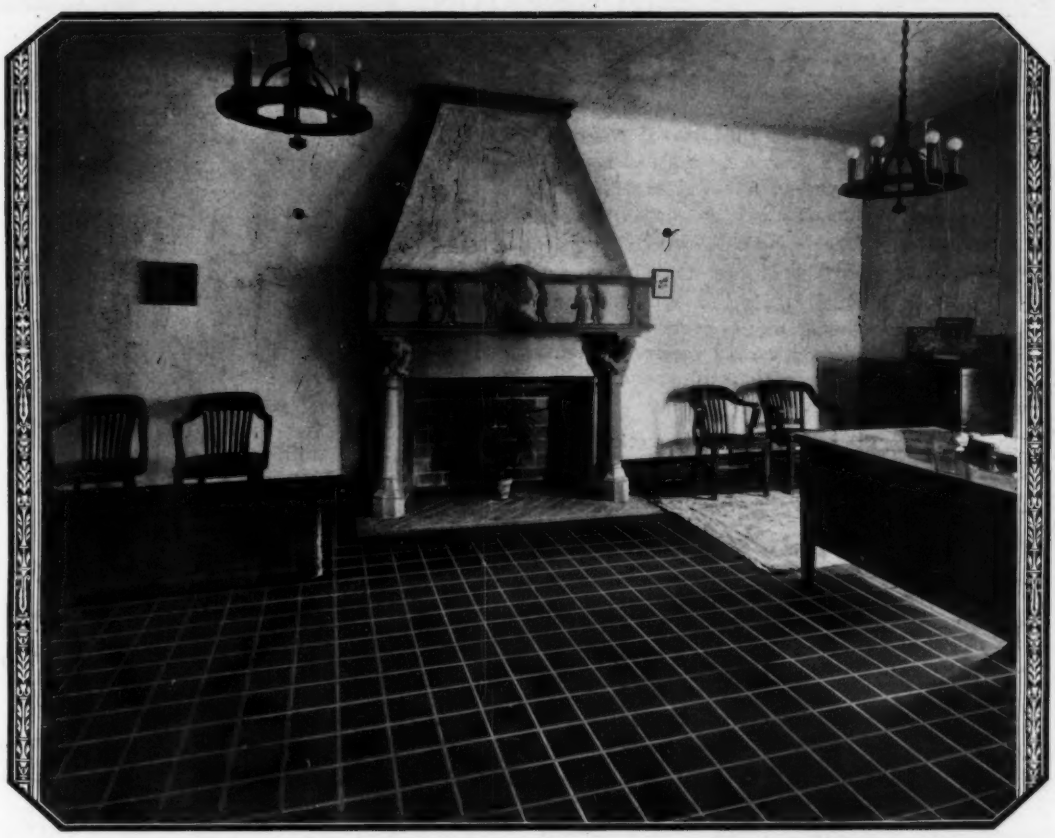

Six-inch squares of red Linotile with half-inch interliners of light gray and a red border. Office of the general manager of the Central States Life Insurance Co., St. Louis, Mo.

The Floor as a Decorative Feature

A MANTEL of unusual design and the Linotile floor in dark red with wide gray joints—other than these, this room has no decorative features and needs none. Here is an illustrative example of the increasing tendency among architects to take fuller advantage of the artistic possibilities of the floor.

Linotile affords ample opportunity for bringing the floor into the decorative scheme. It is furnished in eleven colors and in such a variety of sizes that designs can be readily conformed to rooms of almost any shape or area.

Linotile is a cork composition, resilient and noiseless to the tread, non-slippery, warm and remarkably durable. It is easily cleaned and needs no refinishing. Linotile is laid in waterproof cement over any smooth, dry base. It has no appreciable expansion or contraction and does not buckle, crack or craze.

Full information and detailed specifications are contained in a descriptive book, "Linotile Floors" which, with a sample, will be sent on request.

ARMSTRONG CORK & INSULATION COMPANY, 132 Twenty-fourth Street, Pittsburgh, Pa.
Also manufacturers of Armstrong's Cork Tile.

LINOTILE FLOORS

Custom – Built to Fit Your Rooms

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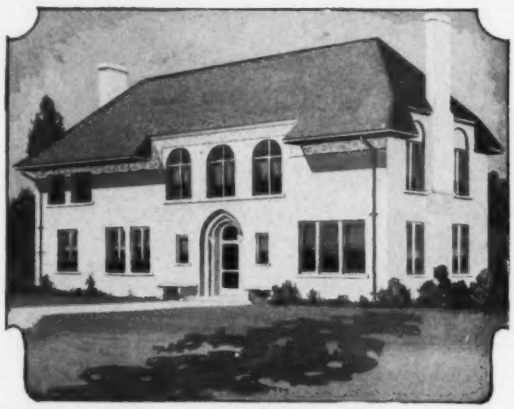
Practical Stucco For The Architect

The practical, worthwhile qualities of Magnestone Roman Finish Stucco have a distinctive appeal to architects everywhere. For permanence and weathering resistance Magnestone wears like granite and limestone. For color or other embellishment it is unequaled.

Magnestone is ideally suited for stipple, cane stone, palm modeling, sponge or other decorative finishes. Accomplished, careful mechanics can secure finishes of infinite architectural detail with Magnestone.

Samples, literature and detailed information will be sent on request.

See our catalog in Sweet's for general information.



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TRADE MARK REGISTERED

Compartments for toilets showers & dressing rooms
An original and complete all steel product.
Weis quality has served well & saved well for more than nine years.
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See Sweets Page 1688

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SOULE, MURPHY & HASTINGS, ARCHITECTS

BATCHELDER-WILSON COMPANY
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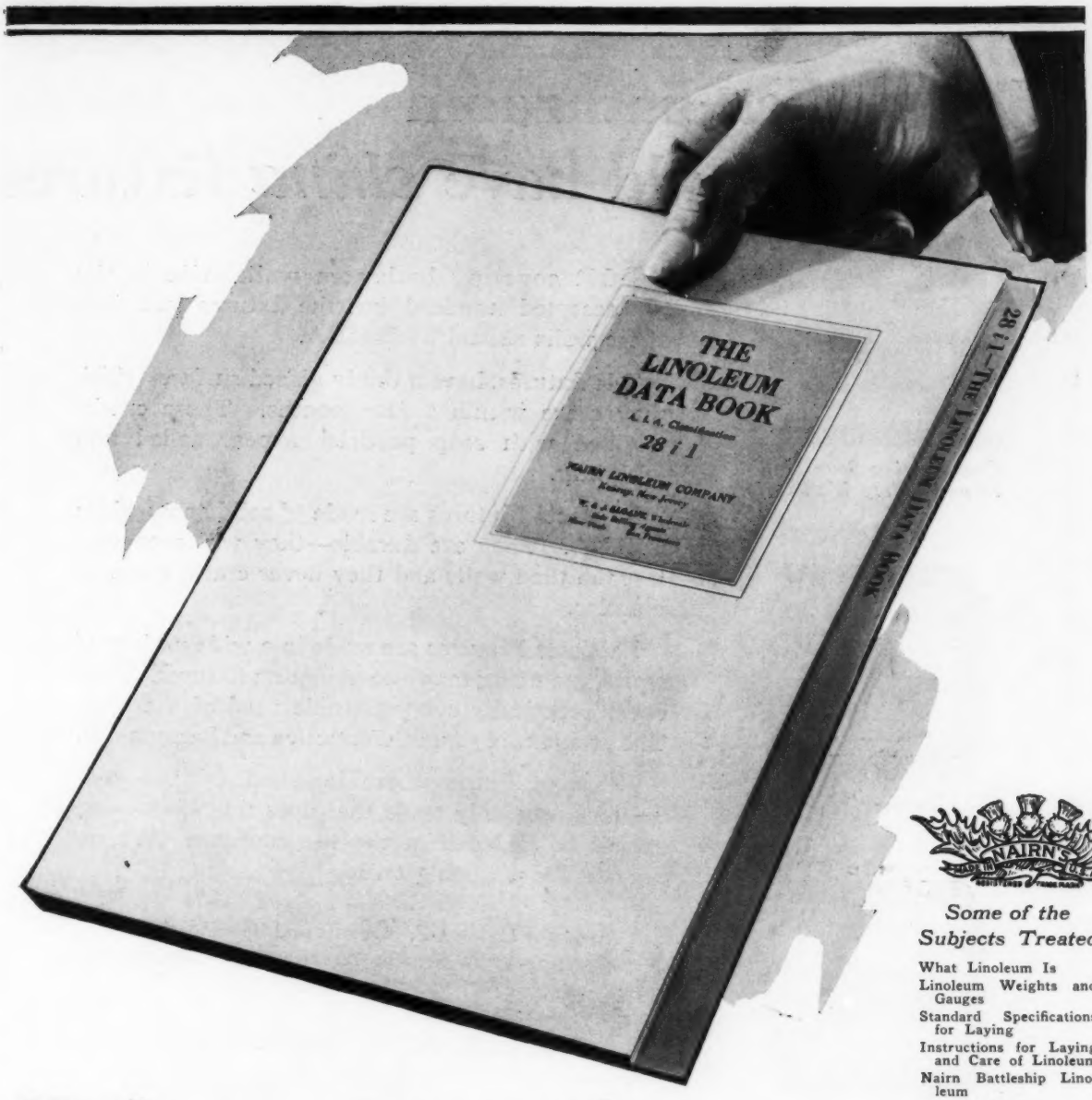


Had your copy yet?

This authoritative digest of linoleum information should be in every architect's files for ready reference.

The use of linoleum in nearly every type of building is increasing so rapidly that it is necessary to have at hand the facts about this artistic, long-lived and sanitary flooring.

This illustrated book gives these facts (see brief outline of Contents) in easily get-at-able form. And it is bound in a stout filing folder bearing the proper A. I. A. classification number.

If you have not received your copy of The Linoleum Data Book yet, we suggest you ask your secretary to write for it at once—or use the coupon. The edition is limited.

NAIRN LINOLEUM COMPANY

203 Belgrove Drive, Kearny, New Jersey

W. & J. SLOANE, Wholesale; *Sole Distributing Agents*
NEW YORK SAN FRANCISCO

NAIRN'S

Some of the Subjects Treated

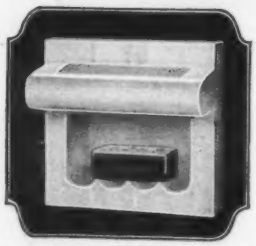
What Linoleum Is
Linoleum Weights and Gauges
Standard Specifications for Laying
Instructions for Laying and Care of Linoleum
Nairn Battleship Linoleum
Plain Linoleum
Tile Battleship Linoleum
Lin Rhuber
Nairn Cork Carpet
Nairn Straight Line
Inlaid Linoleum
Granite, Moulded, Moire and Plank Linoleum
Sample Patterns.

NAIRN LINOLEUM COMPANY,
203 Belgrove Drive,
Kearny, N. J.

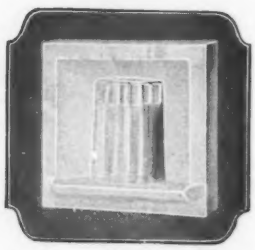
Gentlemen: Please send me The Linoleum Data Book.

Name.....
Firm.....
Address.....
City.....State.....

Why a *tiled* bathroom should have *china* fixtures



Combination Soap Holder and Safety Wall Grip



Tumbler Holder

Sponge Holder

FOR covering bathroom walls, tile is the accepted standard, but the fixtures built into these walls should be CHINA.

Tile fixtures, have a thinly glazed surface, which may craze within a few months. These cracks if filled with soap particles appear soiled and unsightly.

Fairfacts Fixtures are made of solid snow-white CHINA. They are durable—they will even outlast the tiled walls and they never crack, craze or discolor.

Fairfacts Fixtures are made in a wide variety of styles, including many combination fixtures. They cover practically every possible need of the bath. The designs are simple, distinctive and harmonious.

Fairfacts Fixtures are installed by tile contractors—the only trade that does this work—and should be included in the tile contract. We do not sell the plumbing trade.

Send for Catalog F. Details and Specifications also appear in Sweet's Architectural Catalog.

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Dept. F.

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Look for this BATHROOM Fairfacts FIXTURES *trade mark*

Fairfacts Fixtures

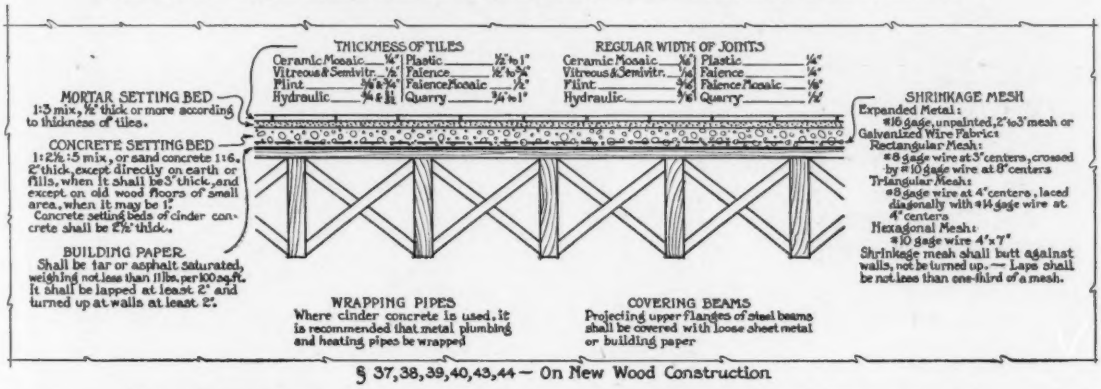
BUILT IN YOUR BATHROOM WALLS

DRAFTING ROOM DETAILS FOR TILEWORK

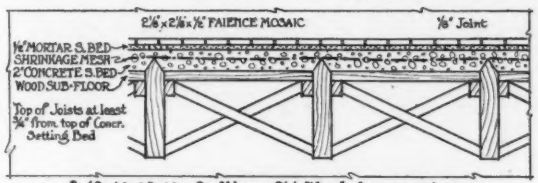
ASSOCIATED TILE MANUFACTURERS

DATA SHEET FOR TILE FLOORS

PREPARED IN ACCORDANCE WITH THE BASIC SPECIFICATION FOR TILEWORK


THICKNESS OF TILES
Ceramic Mosaic ¼" | Plastic ⅜" to 1"
Vitreous & Semivitr. ⅛" | Faience ⅜" to ¾"
Flint ⅜" & ¾" | Faience Mosaic ½"
Hydraulic ¾" & 1¼" | Quarry ¾" to 1"
REGULAR WIDTH OF JOINTS
Ceramic Mosaic 1/16" | Plastic ¼"
Vitreous & Semivitr. 1/16" | Faience ¼"
Flint ⅛" | Faience Mosaic ⅛"
Hydraulic ⅛" | Quarry ¼"
MORTAR SETTING BED
1:3 mix, ½" thick or more according to thickness of tiles.
CONCRETE SETTING BED
1:2½:5 mix, or sand concrete 1:6, 2" thick, except directly on earth or fills, when it shall be 3" thick, and except on old wood floors of small area, when it may be 1".
Concrete setting beds of cinder concrete shall be 2½" thick.
BUILDING PAPER
Shall be tar or asphalt saturated, weighing not less than 11 lbs. per 100 sq. ft. It shall be lapped at least 2" and turned up at walls at least 2".
SHRINKAGE MESH
Expanded Metal:
#16 gage, unpainted, 2" to 3" mesh or
Galvanized Wire Fabric:
Rectangular Mesh:
#8 gage wire at 3" centers, crossed by #10 gage wire at 8" centers
Triangular Mesh:
#8 gage wire at 4" centers, laced diagonally with #14 gage wire at 4" centers
Hexagonal Mesh:
#20 gage wire 4" x 7"
Shrinkage mesh shall butt against walls, not be turned up. — Laps shall be not less than one-third of a mesh.
WRAPPING PIPES
Where cinder concrete is used, it is recommended that metal plumbing and heating pipes be wrapped
COVERING BEAMS
Projecting upper flanges of steel beams shall be covered with loose sheet metal or building paper

§ 37,38,39,40,43,44 — On New Wood Construction


2⅛" x 2⅛" x ½" FAIENCE MOSAIC
⅛" Joint
½" MORTAR S. BED
SHRINKAGE MESH
2" CONCRETE S. BED
WOOD SUB-FLOOR
Top of Joists at least ¾" from top of Concr. Setting Bed

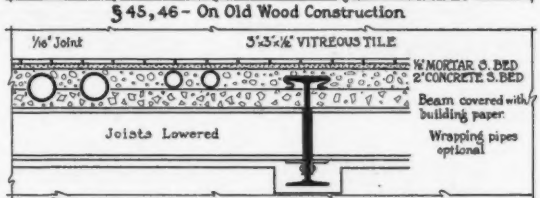
§ 43,44,45,46 – On New or Old Wood Construction

THRESHOLD
1/16" Joint
¾" x ¾" x ¼" CERAMIC MOSAIC
¼" MORTAR S. BED
1" CONCR. S. BED
BUILDING PAPER
OLD WOOD FLOOR
Floor type of the least thickness; used only for small areas up to 100 sq. ft.

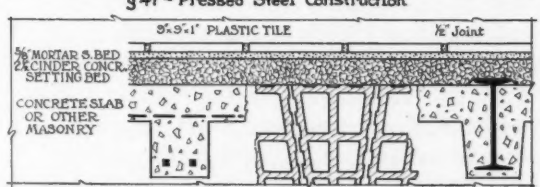
§ 45,46 – On Old Wood Construction

4¼" x 4¼" x ⅜" FAIENCE TILE
¼" Joint
½" MORTAR S. BED
REINF. CONCRETE
(variable thickness)
Mortar Setting Bed placed directly on reinforced concrete. No Concrete Setting Bed

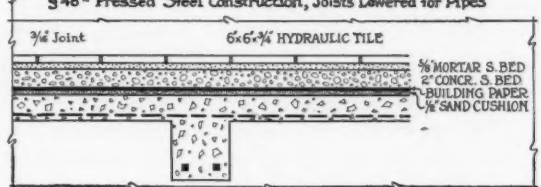
§ 47 – Pressed Steel Construction



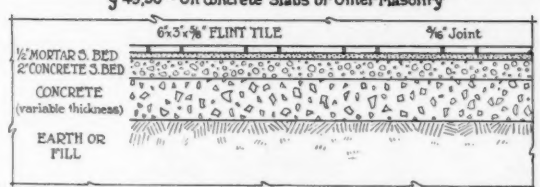
§ 48 – Pressed Steel Construction, Joists Lowered for Pipes



§ 49,50 – On Concrete Slabs or Other Masonry



§ 55 – Sand Cushion



§ 51,52 – On Other Concrete over Earth or Fills

§ 53,54 – Directly on Earth or Fills

Complete specificational clauses pertaining to the proper application of tile to floors of different types of construction may be found in our publication K-300 entitled "Basic Specification for Tilework." This document does not mention by name the product of any manufacturer of tile, but is a general document applicable to any kind of tile installation, and instead of avoiding modifications, definitely offers them. The Basic Specification for Tilework simplifies the work of the specification writer since it makes possible a practical blanket stipulation in the architect's specification providing for the furnishing of materials and the performance of tilework in accordance with a standard document to which bidders may be referred. A single paragraph will often suffice to accomplish this end. If not in your files, request a copy of this Basic Specification. Sent to architects on request.

ASSOCIATED TILE MANUFACTURERS

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Cincinnati

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THE increasing number of prominent architects who are regularly specifying Carey Roofings for fine buildings like this one is significant.

It is reliable evidence that Carey specification roofs possess those qualifications which the architect's experience indicates a modern roof for a modern building must have.

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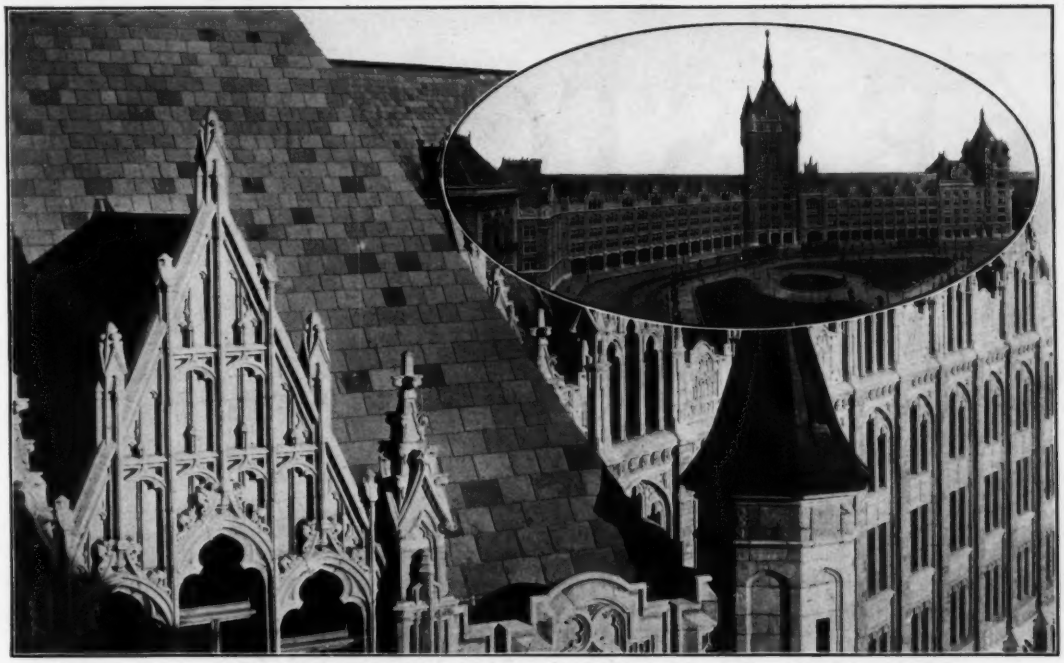
504-524 Wayne Ave., Lockland, Cincinnati, Ohio

Carey
BUILT-UP ROOFS

1873 FIFTY YEARS OF PROGRESS 1923



Office Building of the Delaware and Hudson Railroad at Albany, N. Y.
(Marcus T. Reynolds, Albany, N. Y., Architect)

Where the Best is None Too Good

The Delaware and Hudson Railroad office building in Albany was built to endure through the ages. Slate was used for the roof, stair treads and landings because it was considered the handsomest as well as the most durable and serviceable material available.

Where looks, durability, sanitation and permanent economy are chief considerations, slate is the material architects specify. In the construction of railroad stations, churches, schools and public and business buildings slate is utilized widely not only for roofings, floors and walks but also for blackboards, structural, sanitary and electrical installations.

There are many practical uses for slate in houses built for permanence. Our booklet prepared for home-owners may be of interest to you and will be supplied gladly upon request.

Through our service bureau you may secure any information you may desire regarding slate.

SLATE

CONSIDER ITS USES

Roofs	Bases and Plinths	Garden Walks	Sinks	Shelving
Chimney Tops	Stairs	Fountains	Septic Tanks	Range Bases
Hearths	Risers	Benches	Black Boards	Kitchen Slates
Mantels	Landings	Coping	Drain Boards	Electric Bases
Thresholds	Vestibules	Bathrooms	Ice Box Shelves	Electrical Switchboards
Sills	Porch Floors	Laundry Tubs	Table Tops	Panel Boards
Wainscoting	Areaways	Laundry Trays	Filters	Dough Boards
		Toilet Partitions	Shower Stalls	Work Benches

NATIONAL SLATE ASSOCIATION, 757 DREXEL BUILDING, PHILADELPHIA

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KEYSTONE COPPER STEEL

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is a distinct achievement for quality—the *first* Copper Steel manufactured, so branded and marketed.

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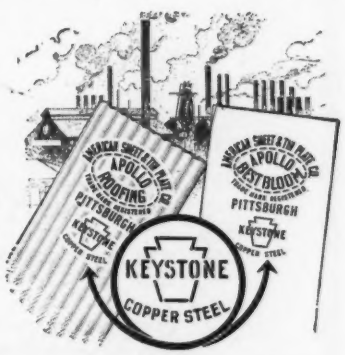

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Olde Stonesfield Roofs and Flagging

Residence,
C. H. Cuno, Meriden, Conn.

Architect,
Frank J. Forster

OUR REPUTATION IS YOUR SPECIFICATION

Send for Booklet No. 23

THE JOHN D. EMACK CO.

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A built-up roof is high or low in cost only in proportion to the value it affords in service.

On an industrial plant requiring from 800 to 1000 squares, the difference in *price* between a Ruberoid Built-up Roof and the *cheapest* roof in ordinary use is *approximately three-tenths of one percent* of the total cost of the building.

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BUILT-UP ROOFS

A Ruberoid Built-up Roof consists of a bottom layer of Ruberoid asphalt felt and two layers of Ruberoid Cap-sheet, each bonded *together with Ruberoid Solid-cement.* It is designed to last.

A Ruberoid Built-up Roof is as reasonable in price as a thoroughly good roof can be. To pay more for a built-up roof, is needless,—to pay less, unwise.

Specifications, samples and descriptive literature sent on request.

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Chicago **Boston**

Pickwick Arms Hotel
Greenwich, Conn.

Tudor Stone Roofs

Frederick French Co.
Designers

One of the most skillfully and beautifully handled roof contours is that of the new hotel at Greenwich, Connecticut—the Pickwick Arms. Here we have an excellent example of the flexibility of Tudor Stone and the ease with which it can be used for broken roof lines and the construction of dormer windows, and still maintain a picturesque roof, which harmonizes perfectly with the general design of the building.

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Rising-and-Nelson-Slate-Company
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FACTORIES
COLUMBUS, OHIO
INDIANAPOLIS, IND.

INDIANAPOLIS, IND

July
Thirteenth
1923

Ramspring Bumper Company,
Chicago, Illinois.

Gentlemen:

In the fall of 1911 we completed the erection of the main building of our Indianapolis factory. T his building is 542 feet long and 87½ feet wide, and is covered with Federal Cement Tile roofing. This roof to date has given us but little trouble and in my opinion has proven up to their guarantee and has been satisfactory in every particular.

To date there has been but two leaks; in fact, the defects so far have been so trivial that they have hardly been noticable. There has been no maintainance expense due to the fact that what little upkeep we have had,has been taken care of by the tile company at their expense. We might also mention that our roof has been inspected by their representatives on different occasions and what few defects we have had, has been discovered by their people. The service rendered by them has been 100%.

Very truly yours,

THE SMITH AGRICULTURAL CHEMICAL COMPANY.

UMW:ML. Per. H. M. Weaver.

This letter, written to a concern interested in Federal Cement Tile, tells the story of Federal permanence and Federal service more convincingly than we can tell it.

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The office partition intended to meet a universal need must satisfy the demands of a wide variety of individuals.

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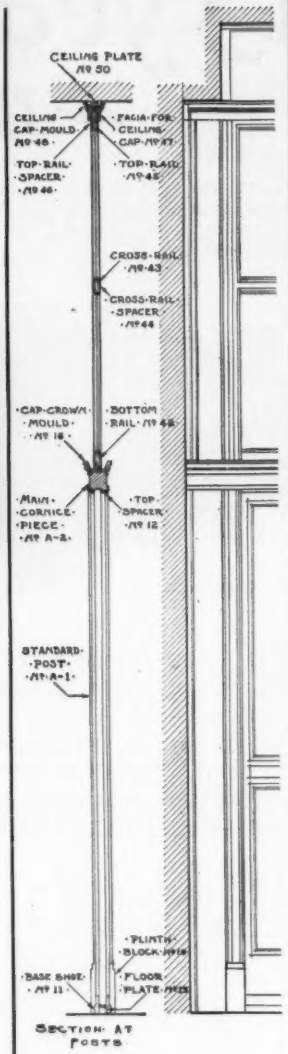

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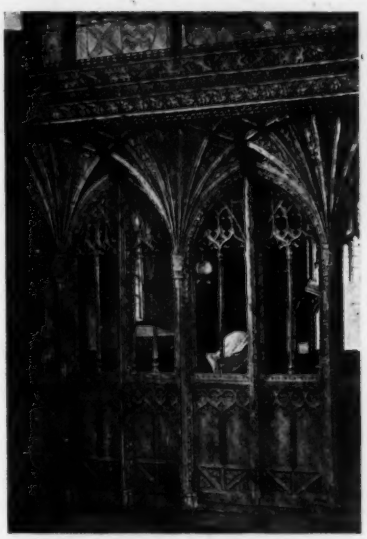
BOOK DEPARTMENT

ENGLISH CHURCH FITTINGS, FURNITURE & ACCESSORIES. By J. Charles Cox, L.L.D., F.S.A. Introduction by Aymer Vallance, 320 pp., 7 x 9 ins. Price $7.50. B. T. Batsford, Ltd., London. G. P. Putnam's Sons, New York.

WERE the history of the liberal arts ever written, it would include no chapter more glowing with interest and more brilliant in achievement than that recording the progress of these arts in England from the beginning of the fifteenth century to the time of the reformation. These arts thrive in the hands of a people of mixed descent, and by that time England had become well settled with a race derived from many stocks, the rich art instincts of the English, combining the best of various strains, being strengthened by ideas derived from the continent.



Sixteenth Century Rood Loft
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From "English Church Fittings, Furniture and Accessories"

The arts, it will be noted, were enlisted very largely in the service of religion. It was before the time when royalty and nobility were building the great homes which came later, and the church fulfilled rather more than would be required of it later on; about it centered the life of the period, and the wealth of cathedrals, abbeys, convents and parish churches was being steadily increased by the donations of the living and bequests of the dead. One result of this lavish generosity toward religion meant the filling of religious edifices of all kinds with treasures of carving in stone or wood, with marvels of metal work, glass painted or stained, tapestry, embroidery, enamel, and examples of the work of all the crafts which were drawn into the service of the church.

The inventories of this period read like pages from romance; the great shrine of Thomas à Becket, at Canterbury, was perhaps the richest in all Europe, wrought as it was of gold and silver and literally covered with precious stones, the gifts of generations of the faithful, and splendor more or less similar was repeated with modifications all over England. The very extent of the riches of the church excited the royal envy. History of the times records the dreary farce of laws of spoliation jammed through an unwilling parliament and the tragedy of the king's despoiler thundering at the convent gate or breaking down the doors of the parish church to rob the house of God of the gifts which had been accumulated during centuries. But with all their zeal, the despoilers overlooked much. Most of the greatest treasures, too famous to be overlooked, perished, but many an obscure parish church or convent chapel escaped with at least some of its treasures intact, or else such as were portable were removed to be hidden away and perhaps forgotten until discovered at a later day.

In this volume one who has written much on the subject of the handicrafts of England deals with such of the ecclesiastical treasures of the pre-reformation era as still exist. The list, while not complete, is of great extent, and Dr. Cox describes and illustrates the carvings of stone, or else of wood, in the form of screens, of canopies over fonts or choir stalls, the metal work and other objects with which the craftsmen of England filled the churches. The volume, admirably written and lavishly illustrated, possesses high interest and value for the architect who concerns himself with church work, and its publication will have its influence upon the training of taste in application to churchly use of these arts.

English Furniture—Its Essentials and Characteristics

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With Foreword by H. Avray Tipping, M. A. F. S. A.

THIS excellent work on English furniture possesses the singular merit of being written for several classes of readers,—for the student, collector, or dealer, but even more particularly for the designer or reproducer of old English furniture, to whom are highly important the well drawn details with which the work is filled,—details of drawer construction; of stretchers and seat framings; of cornice profiles, or details showing the development of the cabriole legs of chairs and tables from 1695 to 1760. One page of these details would be worth to the designer or furniture maker more than the cost of the book.

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VENTILATION

Report of the New York State Commission on Ventilation

THE purpose of the field investigations of the commission was primarily to study certain specific promising and practicable methods of schoolroom ventilation. These investigations included a study of the physical conditions of the air under various methods of ventilation, and subjective results were secured through records of sensations of comfort and mental and physiological reactions of the occupants.

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Dr. FREDERICK S. LEE, Dalton Professor of Physiology, College of Physicians and Surgeons, New York.

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ARCHITECTURAL COMPOSITION. By Nathaniel Cortland Curtis, A.I.A., Professor of Architecture and Head of the School of Architecture in the Tulane University of Louisiana; Professor of Architecture in the Alabama Polytechnic Institute. 250 pp., 7 x 9½ ins. Price $6. J. H. Jansen, Cleveland.

THERE is always a feeling of satisfaction experienced on coming upon a work written by one who has taught as well as practiced architecture. Its pages are likely to reflect the experience of years of practice,—the testing out and proving of theories and the securing of a judicious balance between the ideal and the practical,—and the experience which results from years of teaching, of instructing others in the art of thinking for themselves when once there has been secured the groundwork of understanding which must act as a foundation for any study of architecture.

Someone has defined architecture as "the art of building beautifully," and Mr. Curtis points out here that the primary difference between engineering and architecture lies in the clothing of utility with grace and beauty which is the function of architecture, and the use of utility without thought of the appearance of the structure and with little or no thought of its possible effect upon the mind of the observer, which is the purpose of engineering. The writer draws attention to two structures, comparatively well known, to point out this fundamental difference,—the Manhattan Bridge, certainly a work of architecture, and the Williamsburg Bridge, just as certainly a piece of engineering, though both structures serve precisely the same function. This clothing of the nakedness of utility with garments of beauty was not entirely overlooked by the ancients. The Romans, for all their devotion to what is ordinarily regarded as engineering, managed to give their aqueducts, baths or arenas a certain grace of form, a simplicity and directness of expression which never for one moment led an observer to suppose a structure to be anything other than what it was. Much of this use of grace of form is to be noted in the work of certain architects practicing in America today. Many a huge warehouse or factory building or else a structure such as a stadium or viaduct by reason of its fine simplicity of form and line, worked out in materials which are often the least expensive, points out the difference between engineering and architecture.

Mr. Curtis' excellent and helpful book has a use which is not limited to the classroom or to the service of those who are some day to become architects. It possesses an appeal to that broad and continually growing body of public opinion in which interest in architecture has been awakened and is waiting to be trained and directed to the point where enlightened interest becomes intelligent and discriminating appreciation. Nothing is more necessary if architecture is ever to attain to a period as prosperous as existed say in Georgian England, possible only by reason of there being many enlightened amateurs, when a gentleman's education presupposed rather more than a bowing acquaintance with architecture. With this end in view the author discusses the "Nature of Architecture," the fundamental æsthetic laws of architecture, and architectural creation. Another chapter takes up the "Elements of Architecture" and such subjects as the orders, walls, doors, windows, porticoes, arcades and vaults. Under the "Elements of Composi-

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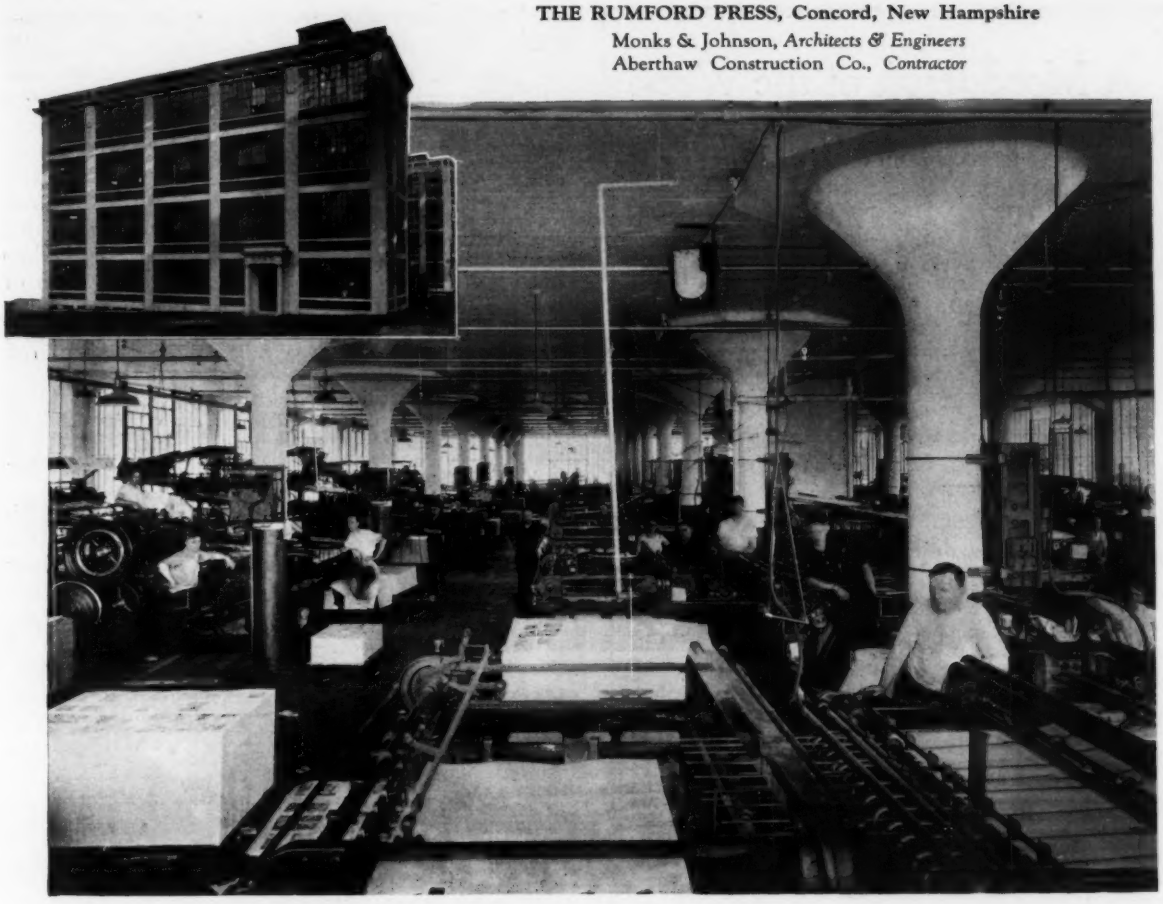

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¶ Many of the items presented here include loggias, terraces, gardens and other out-of-door work which is developed with the care and thought which characterize the buildings themselves, and full plans of grounds and gardens accompany most of the illustrations. This is a volume which should be included in the working library of every architect and landscape architect.

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tion" Mr. Curtis discusses the treatment of the plan proper, and so on with all the departments of designing and planning, one helpful part toward the end discussing the treatment of sites and the matter of orientation. All these chapters are illustrated by a great number of drawings, some being of buildings of the antique age while others are of structures completed in New York or elsewhere in America within the last few months. A volume of this character is valuable in that it leads the reader, almost without his knowing it, into wider reading and study. It presents many points of contact with related arts, such as painting and sculpture, and many also with decoration in divers forms, and all this enhances the value of the work for many purposes.

SIR CHRISTOPHER WREN'S BICENTENARY: 1723-1923. Memorial Volume. Lavishly illustrated. American Editions: Subscribers' Edition, $30, net; Edition de Luxe, $50, net; Edition Limited to 25 Copies, Bound in Leather, $150, net. Hodder & Stoughton, London.

THE year which saw the commemoration of the 200th anniversary of the death of Sir Christopher Wren records many tributes to the skill of that great master builder. England claims him, and rightly, among her eminent sons, but in a special sense he belongs to the entire English-speaking people scattered and dispersed throughout the world, and countless societies of architects in many lands have paid in one way or another the tribute of their admiration for the man and their reverence for his great achievements.

But perhaps when another century has passed and the record of many tributes has perished, and architects of 2023 are paying their tributes to Wren's great name it will be found that the one most lasting relic of the bicentenary is a volume issued in commemoration of the event under the direction of the Royal Institute of British Architects. This great volume, magnificent in its contents and sumptuously made, might be described as a memorial volume of essays regarding various aspects of the life and work of Sir Christopher Wren.

The work, as might be expected, covers the life of Wren and his most important work, particular emphasis being given to St. Paul's. In addition to the interest added by the inclusion of numerous plates in full color there is that given by the reproduction in facsimile of drawings and letters from the hand of Wren himself.

THE PLANNING OF THE MODERN CITY. A Review of the Principles Governing City Planning. By Nelson P. Lewis. Illustrated. Second Edition, Revised. 423 pp., 6 x 9 ins. Price $5. John Wiley & Sons, New York.

CRITICISM is frequently made of the ragged and uncouth appearance of American cities, and particularly of their almost entire lack of what might be called a definite plan, and travelers are given to drawing comparisons between certain of the European capitals, Paris and Vienna, for example, and American cities such as New York or Chicago, comparisons not at all flattering to the American cities.

Of course the ideal city would be definitely planned from the beginning, and its "zones" would be well drawn, even though provision were made for considerable expansion and consequent overlapping of these districts. But the critics hasten to remind us that Paris has been developed from a dozen or more primitive villages, and that its present symmetry and well

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ordered dignity are the results, not of a beginning upon definite lines, but of triumph over untold obstacles; and they point out the difference between the development of Paris during the past 20 or 30 years, with its excellent arrangement of avenues and streets and comparatively harmonious buildings, and the upbuilding during the same period of any American city, with its streets planned upon a "checker board" system, and buildings which suggest chaos given structural form.

The truth of the matter is that the dignity of most European cities is due chiefly to the control or supervision which government has been able to exercise over their development,—to the power of national or municipal laws to regulate building, to alter the arrangement of streets, and even to create new streets, squares and open spaces where they are desirable. Little of such governmental control is possible in America, and since private initiative almost always follows the course pointed out by private advantage or profit, it has been found difficult, if not impossible, to enforce even such provisions as really exist. It might seem, too, that with the growth of democracy or "popular government" there comes a consequent weakening of the power of the state or municipality to effectively supervise. The present government of France, for example, might have considerable difficulty in forcing any such rearrangement of Paris as was so easily done by the architects and town planners of Louis XIV; the ragged appearance of certain parts of London and the destruction of Regent street now going on might not have been so complacently endured in the days of the autocratic Georges, while in America, where Democracy, theoretically at least, is supposed to sit enthroned, and where there are few or no laws upon the subject of planning or carrying out urban development, the lack of control is reflected in the chaos which exists practically everywhere.

In this volume, a new and somewhat altered edition of that published some years ago, Mr. Lewis supplies excellent advice regarding the building and developing of cities. The last few years have brought into effect the provisions of "zoning" systems which are now in force in many cities, while many other cities are reported to be watching the results with a view to enacting zoning ordinances of their own, and some of the benefits to be derived from these laws are dwelt upon here.

LIFE ON A MEDIÆVAL BARONY. By William Stears Davis, Ph.D., Professor of History in the University of Minnesota. 414 pp., 5½ x 8 ins. Price $3.50. Harper & Brothers, New York.

FOR the architect there is much of interest in this historical study in which the author visits in spirit a barony situated in the Ile de France not a great distance from Paris. The time is that greatest of centuries, the thirteenth, when the Gothic period was in its flower and when over all France the master builders were rearing their cathedrals and abbeys. A vivid account is given of the organization and workings of the feudal system as it then existed and life on a barony as it was lived at that time. The architecture, dress and customs of the period are portrayed, and descriptions are given of a mediæval fair, a wedding at the baron's castle, and the ceremonies attending the knighting of a son of the house. An admirable study of a time when architecture was inextricably interwoven with the lives of the people.

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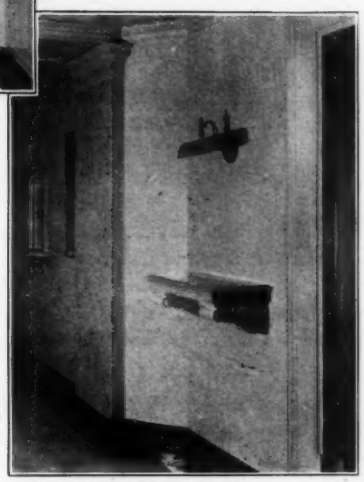

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VOLUME XXXIX NUMBER 6

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ALBERT J. MacDONALD, Editor

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HOUSE BEAUTIFUL COVER COMPETITION

THE success of the competition for cover designs held last year has led the *House Beautiful* to repeat this event and again to offer two prizes, one of $500 and one of $250 to the successful contestants. The competition closes February 9, 1924. Full particulars regarding the competition may be had on application to the Competition Committee, House Beautiful, 8 Arlington street, Boston.

SMALL HOSPITAL COMPETITION

WITH a view to placing them on record in accessible and permanent form, the publishers of the *Modern Hospital* have issued a brochure containing the designs and plans received in its recent competition for plans for a general hospital having from 30 to 40 beds.

The general program was announced in the fall of 1922, and 51 plans were submitted. The jury of award was headed by Dr. S. S. Goldwater, Director of Mount Sinai Hospital, New York, Chairman. The jury met on March 6 and 7, and after a painstaking examination of the plans, made these awards: First Prize, Butler & Rodman, New York; Second Prize, John J. Roth, Los Angeles; Third Prize, Ernest Hoedtke, Cambridge, Mass.; First Honorable Mention, Cervin & Horn, Rock Island, Ill.; Second Honorable Mention, L. C. Dillenback, Urbana, Ill. The brochure is valuable to architects.

THE TRAINING OF APPRENTICES

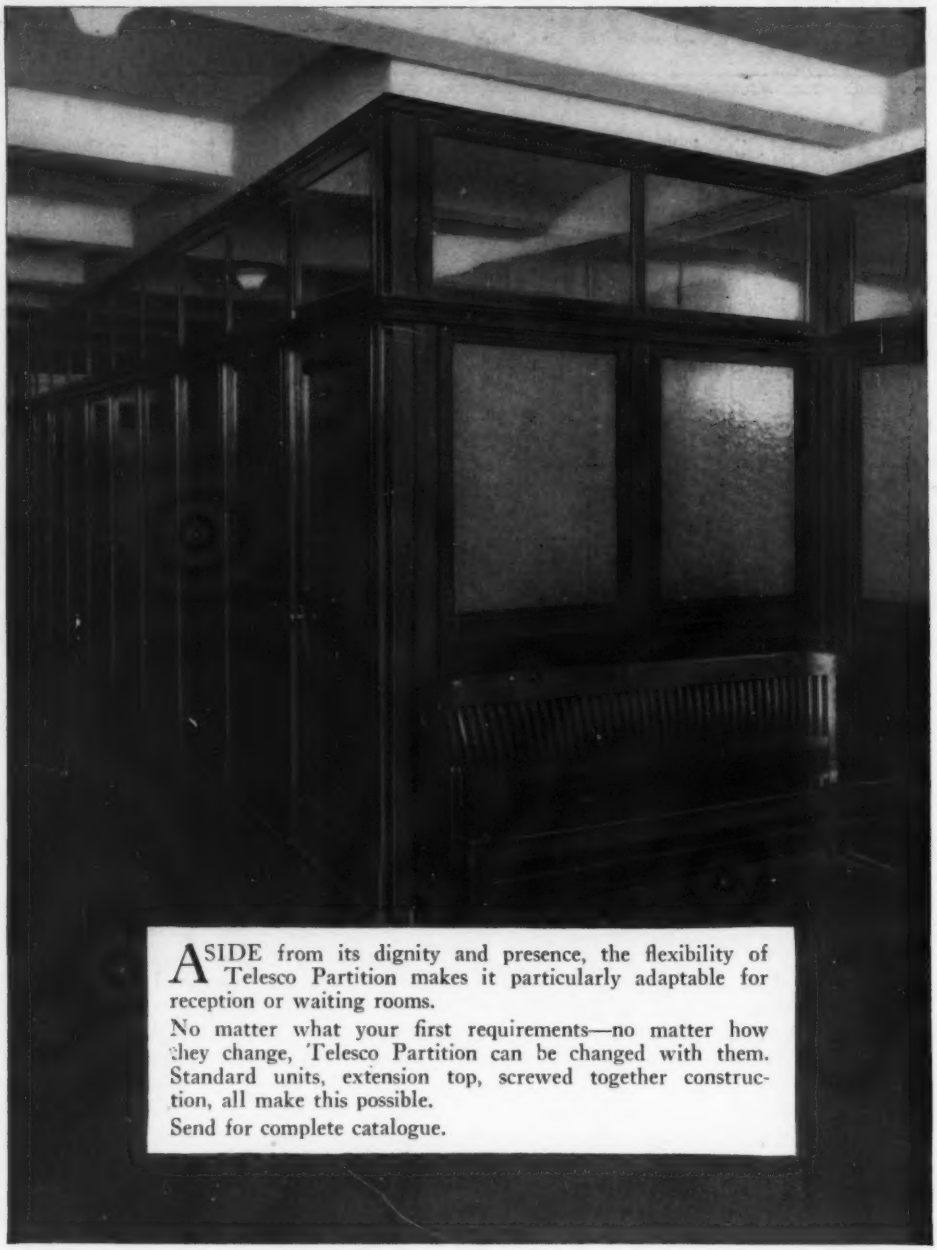
RECENTLY the American Construction Council announced the creation of a Committee on Apprenticeship, Vocational Guidance and Craftsmanship, with F. W. Walker, Secretary of the Associated Tile Manufacturers, as its chairman. Announcement of part of the personnel of this committee is now made. The list includes the names of many well known architects from various parts of the country, of representatives of other professions, and of various associations of employers.

In addition the different bodies representing labor have been asked to nominate representatives upon this important committee of the council. It is expected that a meeting of the committee as a whole will be called shortly, probably in Buffalo, the week of December 6. The individuals and representatives of organizations there assembled will help in the further development of apprenticeship in the construction industry through the appropriate agencies of the council co-operating with all the organizations within the industry. Any other association vitally interested in this subject is invited to write the American Construction Council, at 28 West 44th street, New York, which is its permanent headquarters, and to which communications are addressed.

OTHER effort in this direction is recorded by the Boston Society of Civil Engineers. The November issue of its *Journal* gives an account of its meeting on September 19, when the general topic of discussion was "Apprenticeship in the Building Trades of Boston," with addresses by William Stanley Parker, George Thornton, Heywood S. French, James M. Gauld, and also by Frank M. Gunby, who in addition to being president of the Boston Society of Civil Engineers is a representative of the Boston Building Congress on the Apprenticeship Commission.

In order to cover the subject as thoroughly as possible it was arranged to have four speakers discuss the matter from as many different points of view. Thus the subject was treated from the standpoint of the Boston Building Congress by Mr. Parker, its president, who is also president of the Commission on Apprenticeship and vice-president of the American Institute of Architects; Mr. Thornton, the second vice-president of the Bricklayers, Masons and Plasterers' International Union of America, spoke as a representative of a craft which suffers greatly from seasonal unemployment; the point of view of the Building Trades Employers' Association was expressed by Mr. French, the association's representative on the Commission on Apprenticeship, while the matter was considered from still another angle by Mr. Gauld, the secretary of the Massachusetts State Council, United Brotherhood of Carpenters and Joiners of America, and a member of the Apprenticeship Commission. Before the end of the meeting there was a general discussion.

One point in Mr. Parker's address should be noted as suggesting the spirit in which the apprenticeship problem must be approached if it is ever to be really solved. In speaking of the Boston Building Congress, Mr. Parker said: "It is made up of architects, engineers, contractors, subcontractors, labor men, material men, material producers and building investment men. These eight principal elements in the industry comprise the Building Congress, and anything which comes out of the deliberations of the congress comes out of the deliberations of all these elements, who have been present and have discussed the thing frankly, with all their cards on the table. And you have no idea what a good effect it has had on all of us to discuss things under those conditions. Any two habitual rivals may get together in a room and fire a lot of 'buncombe' at each other. But let them discuss the same subject with four or five other e'ements of the industry present, and that has the admirable result of eliminating the buncombe and in getting them down to brass tacks. They know what the others think, and hear them discuss matters freely in open meeting, and this has a very healthy effect on everyone concerned."



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Early Italian Renaissance Walnut Furniture, by Kensington

THE furniture of the Italian renaissance bore the closest relationship to the architecture of the period. If not actually the work of the architect, his controlling influence was felt both in its design and construction. It is natural, therefore, to find in it the perfect balance of proportions and scholarly rendering of classic detail that characterize renaissance architecture. Whether simple or magnificent it possesses an unsurpassed dignity that makes it especially suitable for rooms of a somewhat formal character.

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Architects interested in completing the interiors they design with furnishings harmonious in both character and quality are cordially invited to avail themselves of the service of the Kensington Showrooms and staff.

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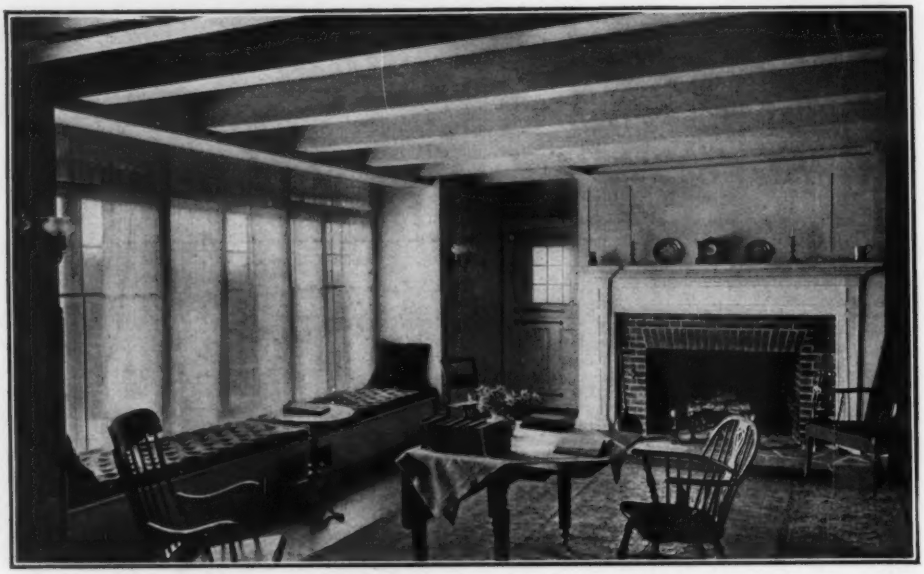

Living-room in country home of Jules Breuchaud, Ulster Co., N. Y. Selected from Keefe's AMERICAN HOUSE. © U. P. C. Book Co.

A true concept of old Dutch interiors

THE inviting interiors of the Breuchaud house are admirable examples of old Dutch work. In his choice of decorative elements, the architect, Mr. Myron S. Teller, of Kingston, N. Y., has happily caught the spirit of the old Dutch craftsmen. Particularly do the walls and woodwork of the living-room pictured above reflect the traditional Dutch simplicity.

As a permanent base, the plaster side walls received three coats of Dutch Boy white-lead and linseed oil tinted a warm gray with lampblack, chrome yellow, yellow ochre, and raw umber. For the finishing coat the same color was used, but the white-lead was mixed with flatting oil instead of linseed oil to give a flat finish.

To secure a harmonious contrast both for color and tone effect, the woodwork and beamed ceiling were then painted an ivory white with an eggshell-gloss finish. This finish was put on over a lead and linseed oil base.

For the pleasingly simple or the most ornate decorative scheme, Dutch Boy white-lead has unlimited possibilities. Mixed with linseed oil for gloss effects or with Dutch Boy flatting oil for flat and semi-gloss effects, it forms a paint that spreads far and retains its color tone for years.

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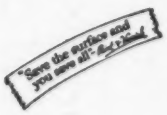

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DUTCH BOY WHITE-LEAD

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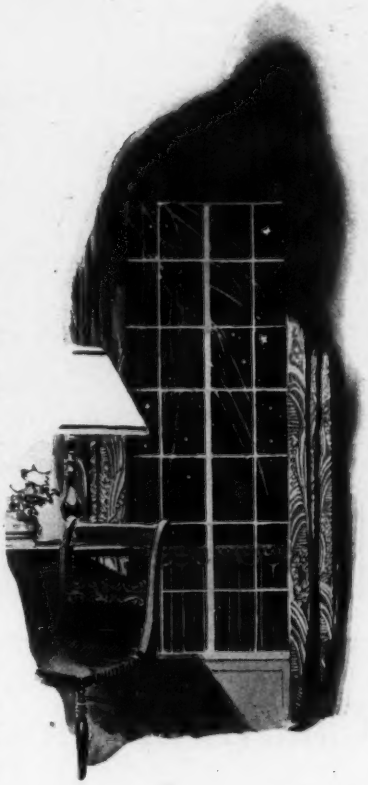
TOILES de RAMBOUILLET

An unusual group of hand-blocked linens from France as distinctive as the famous Toiles de Jouy

THE fascinating designs printed in Oberkampf's workshop at Jouy, France, created a vogue which the intervening years have failed to dim. Today Toiles de Jouy are as famous, as much prized as they were back in the late 18th Century when they first appeared.

Now has come a new series of French printed linens as distinctive in their way as the Toiles de Jouy. Several French artists of note, exhibitors in the important Salons, are creating the designs for this new group called Toiles de Rambouillet after the ancient chateau so closely linked with the history of France.

One of the artists who is creating designs for the Toiles de Rambouillet series composed and painted the cartoon from which is being woven the Gobelin tapestry commemorating the participation of the United States Army in the World War. This will decorate one of the rooms in the White House. Two of the artists are pupils of Puvis de Chavannes, the French master of modern mural decoration who is represented in this country by several notable murals in the Boston Public Library.

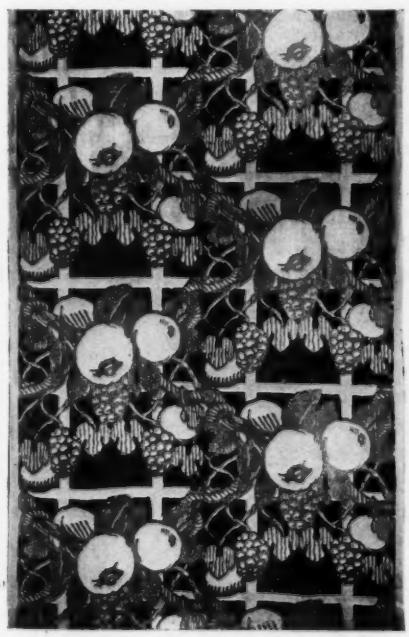


A group of modern French artists created the designs for Toiles de Rambouillet, the unusual series of printed linens recently imported by Schumacher. The design at the left is hand-printed in two soft colors with charming irregularity.

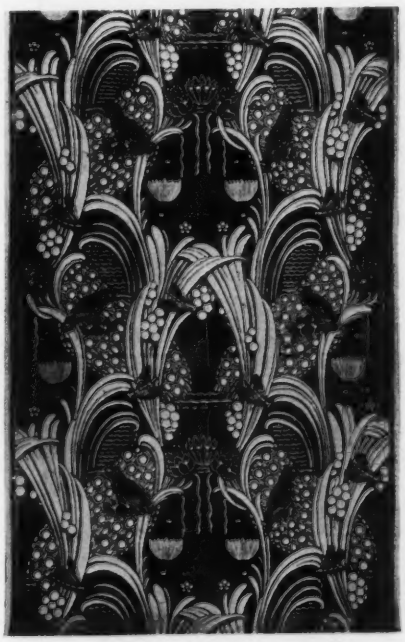
Each design is hand-printed on linen, not in a hard, flat way but so as to produce a mottled, uneven effect. At times the colors are light, fresh, almost transparent; again they are soft, subdued, mellow like those in an antique piece. Often the artist has chosen to have his design printed in only one color, sometimes two — rarely more than three. The designs themselves are well balanced compositions full of grace and variety done with the freedom of execution which characterizes real mastery.

This simplicity of coloring and the choice designs distinguish Toiles de Rambouillet, set them apart from all other printed linens and indicate a potential vogue as great as that of the Toiles de Jouy.

The first group of Toiles de Rambouillet has just been imported. This notable series is exclusive in the United States with F. Schumacher & Co., Importers, Manufacturers, Distributors to the trade only, of Decorative Drapery & Upholstery Fabrics. 60 West 40th Street, New York. Offices in Boston, Chicago, Philadelphia.



Particularly effective is the design at the right, hand-printed in two colors. Toiles de Rambouillet are appropriately used at windows, as wall panels, and as covers for chairs and couches. Wherever they are used in a room they add a distinctive touch which no other fabric can give.



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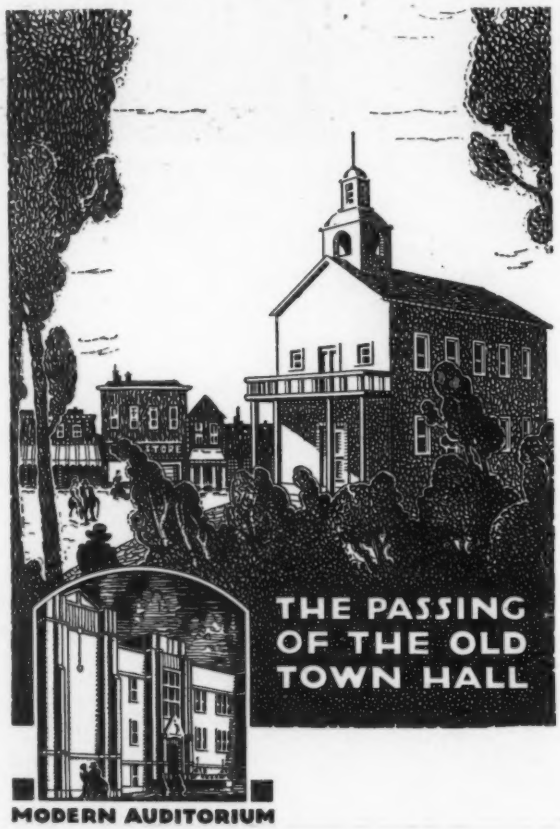

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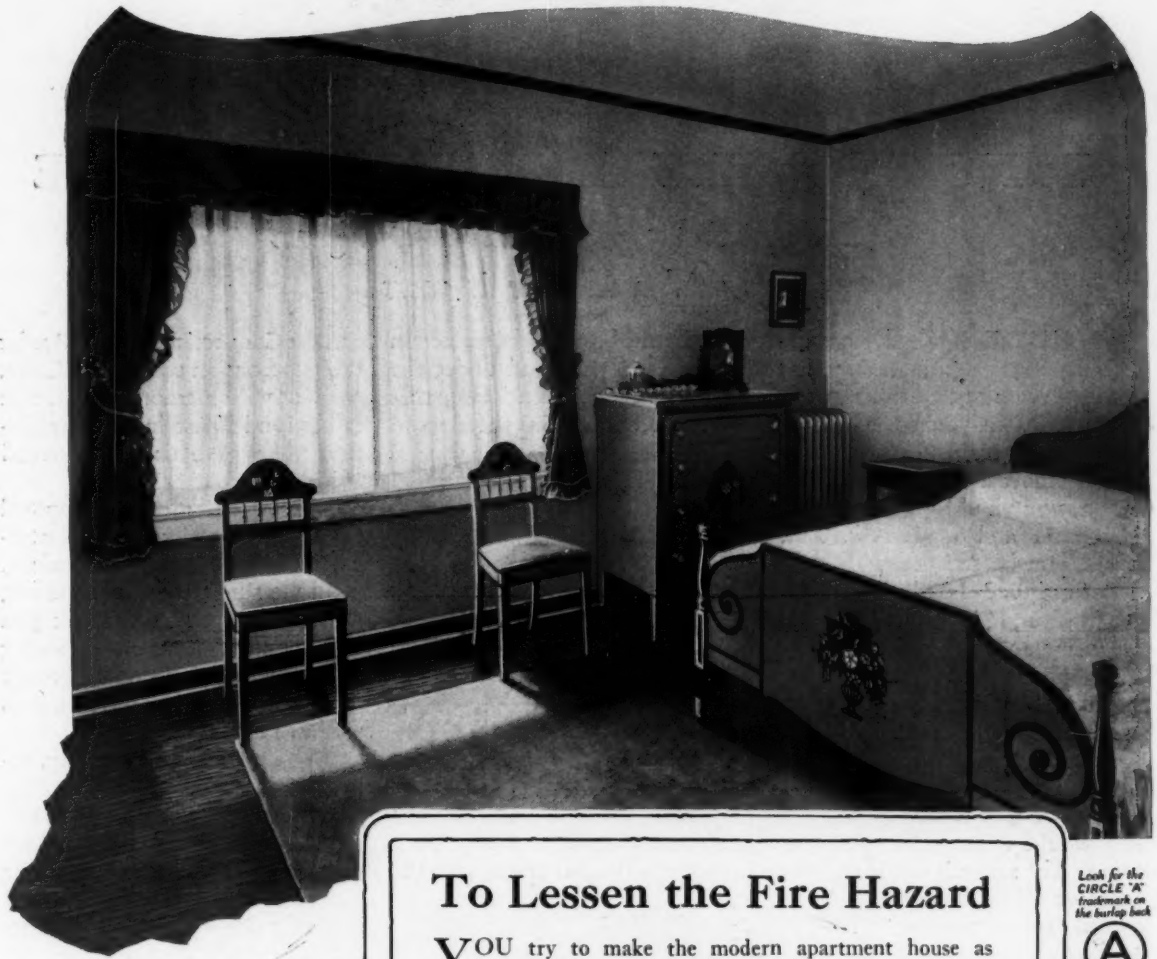

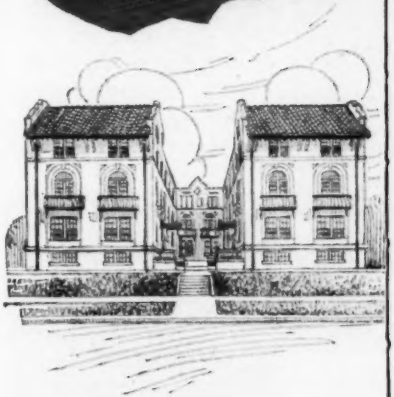

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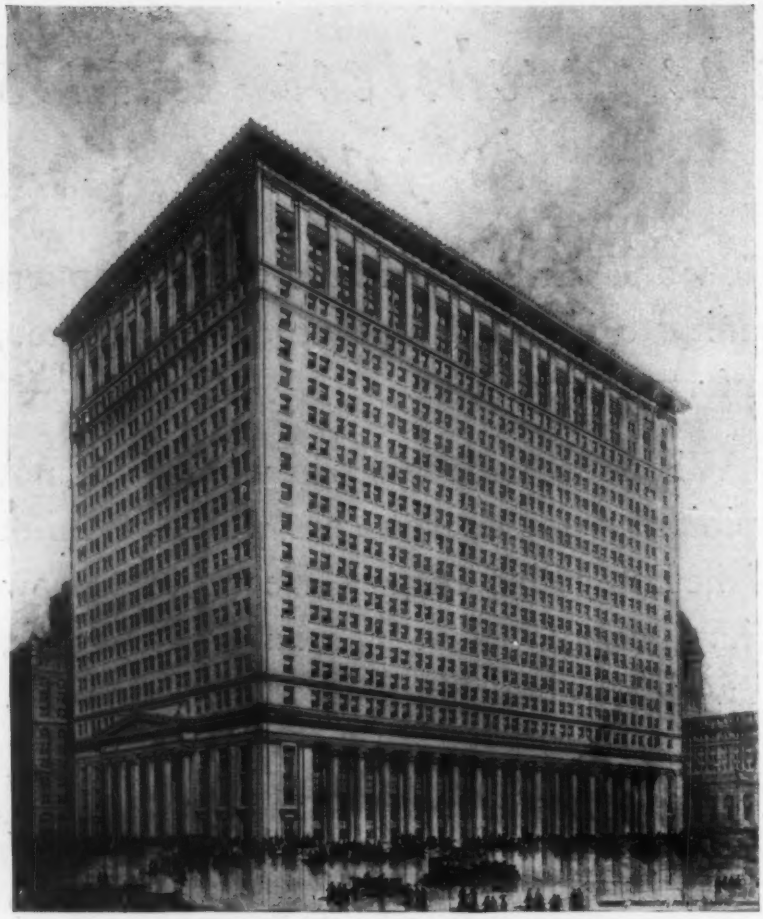

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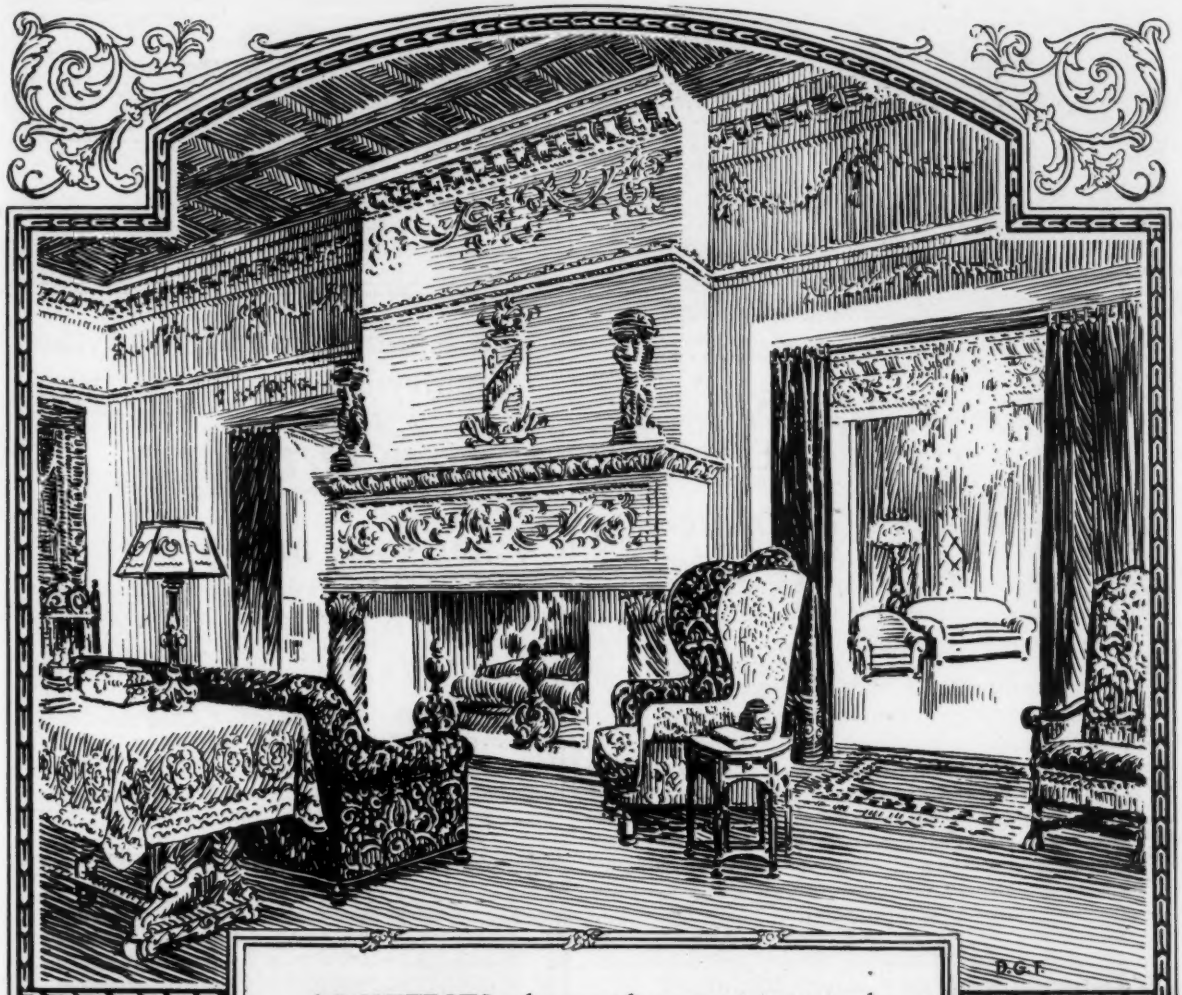

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Helped sell these apartments

The builders of the El Tovar apartments installed Murphy Beds throughout for two reasons.

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The El Tovar was sold by the time it was completed. The purchaser was so pleased that he ordered the builders to duplicate it on two other boulevard corner locations.

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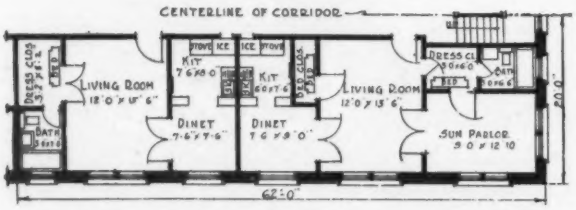
Floor plan showing 2 typical units



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SOME NEW YORK DECEMBER EXHIBITIONS

Anderson Galleries, Park Ave. and 59th St.—Water colors by Eduard Buk Ulreich and murals by Clara Fargo Thomas, to December 15; silver by George Jensen, Dec. 10-22; Egyptian jewelry collected by Azeez Khayat; interiors by Karl Freund and Gerald Kelly.

Arden Gallery, 599 Fifth Ave.—Sketches, pictures and book plates for children; and exhibition of paintings, pastels and drawings, to Dec. 25.

Art Center, 65-67 East 56th St.—Exhibition by members of the Louis C. Tiffany Foundation, to Dec. 15; miniatures by the Countess Korzybski, to Dec. 15; craftwork by the Art Alliance, to Dec. 22.

Babcock Galleries, 19 East 49th St.—Exhibition of cabinet paintings, Dec. 10-31; paintings by James Scott, Dec. 10-31.

George Gray Barnard's Cloisters, 454 Fort Washington Ave.—Open daily except Mondays.

Brooklyn Museum, Eastern Parkway—Water colors by American and foreign artists, drawings by Aubrey Beardsley and other English artists, and sculpture by Augustus Saint-Gaudens, to Dec. 20.

Ehrich Galleries, 707 Fifth Ave.—An exhibition of madonnas by old masters; metal work and garden furniture by Marie Zimmerman.

Mrs. Ehrich's Gallery, 707 Fifth Ave.—Christmas exhibition of Italian linens, pewter, leather work. Cantagalli ware, Christmas cards, etc., through December.

P. Jackson Higgs, 11 East 54th St.—The Bachstitz Collection of Renaissance Bronzes.

Jersey City Public Library, Bergen Branch—Paintings by Capt. W. S. Clime, to Dec. 20.

Kraushaar Galleries, 680 Fifth Ave.—Paintings, drawings and pastels by Charles A. Bischoff, beginning Dec. 3.

Macbeth Galleries, 450 Fifth Ave.—Paintings around Provincetown by Charles W. Hawthorne and flower paintings by Marion C. Hawthorne, beginning Dec. 11; paintings by Douglass Parshall, beginning Dec. 11.

Metropolitan Museum, Central Park at 82nd St.—The Ballard collection of Oriental rugs; prints by Scotch, English and American contemporaries and designs for ornament before 1800; Chinese paintings, embroideries from the Greek Islands, beginning Dec. 10.

Munich Art Associations, Waldorf-Astoria, suite 120—Paintings and sculpture by members, to Dec. 24.

National Academy of Design, 215 West 57th St.—Winter exhibition, to Dec. 16.

Pen and Brush Club, 16 East 10th St.—Opening exhibition in new club house of paintings by members.

Salmagundi Club, 47 Fifth Ave.—Exhibition of thumb box sketches, to Dec. 22.

School of Design and Liberal Arts, 212 West 59th St.—Summer sketches from Brittany by Katherine E. Starr, through December.

Mrs. Sterner's Gallery, 22 West 49th St.—Pastels by Ruth Deyo.

Whitney Studio Club, 10 West 8th St.—Paintings by Thomas Donnelly, Richard Lahey, and Richard Marwede and sculpture by Mary Wesselhoeft, to Dec. 14.

Women's City Club, 22 Park Ave.—Flower paintings by Elizabeth Hardenbergh, Edith Penman, Maud Mason, Carle J. Blenner, Clara MacChesney and Florence Gotthold.

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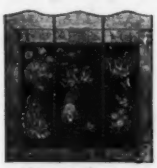

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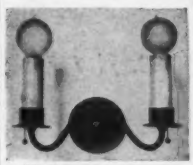

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CONCRETE WALLS	S-W Concrete Wall Finish	Old Dutch Enamel, Gloss		
CEMENT FLOORS	S-W Concrete Floor Paint	S-W Concrete Floor Paint		
EXTERIOR WOOD SURFACES	SWP (Sherwin-Williams Prepared Paint)	Old Dutch Enamel, Gloss	S-W Preservative Shingle Stain S-W Acid or Oil Stain	Rexpar Varnish
EXTERIOR METAL SURFACES	Kromik Structural Steel Primer Metalastic (for finishing coats)	Old Dutch Enamel, Gloss		
FACTORY WALLS (Interior)	S-W Eg-Shel Mill White S-W Fume Resisting White	Old Dutch Enamel or Enameloid		
FLOORS (Interior Wood)	S-W Inside Floor Paint (the enamel-like finish)	S-W Inside Floor Paint (the enamel-like finish)	Oil Stain or Floorlac Varnish Stain	Mar-Not Floor Varnish
GALVANIZED IRON SURFACES	S-W Galvanized Iron Primer (Finish with any Paint)	S-W Galvanized Iron Primer and Old Dutch Enamel		
INTERIOR WALLS AND CEILINGS	Flat-Tone Wall Finish S-W Semi-Gloss Wall Finish	Old Dutch Enamel or Enameloid		
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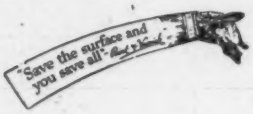

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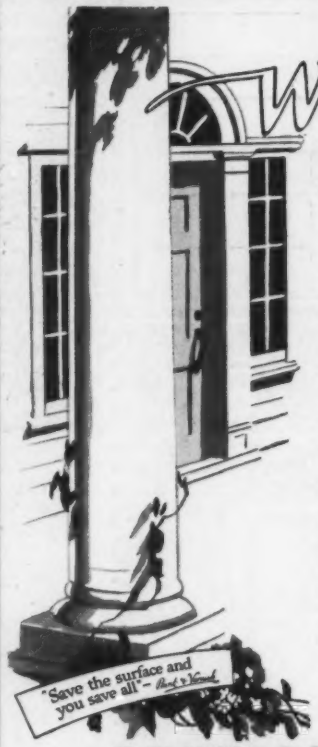

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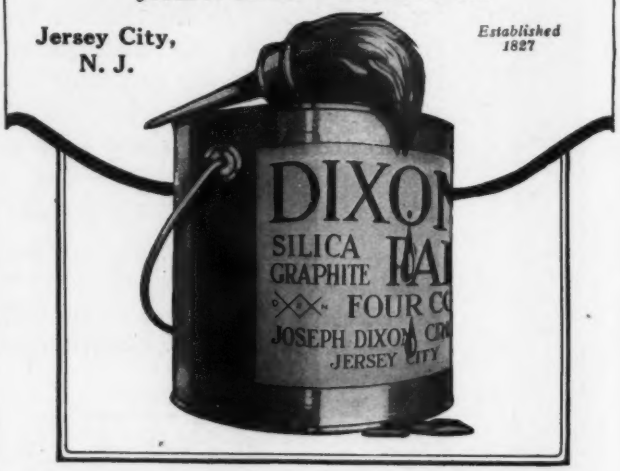

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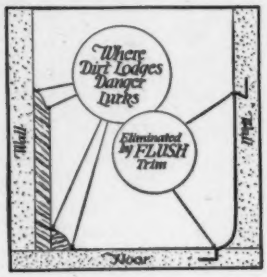

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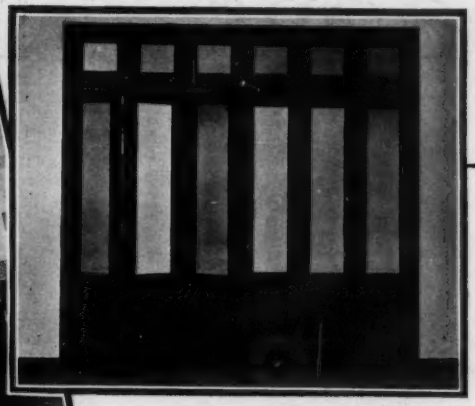

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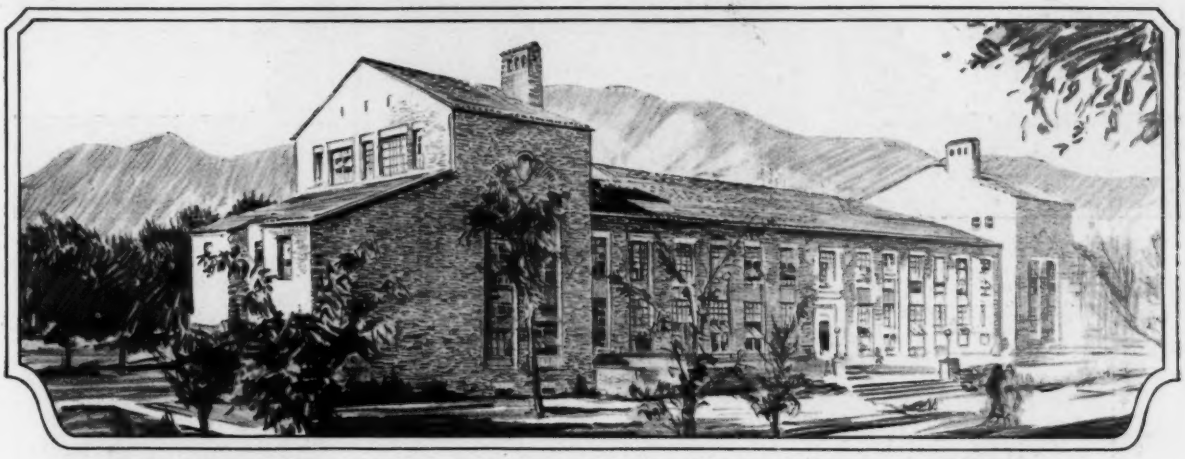

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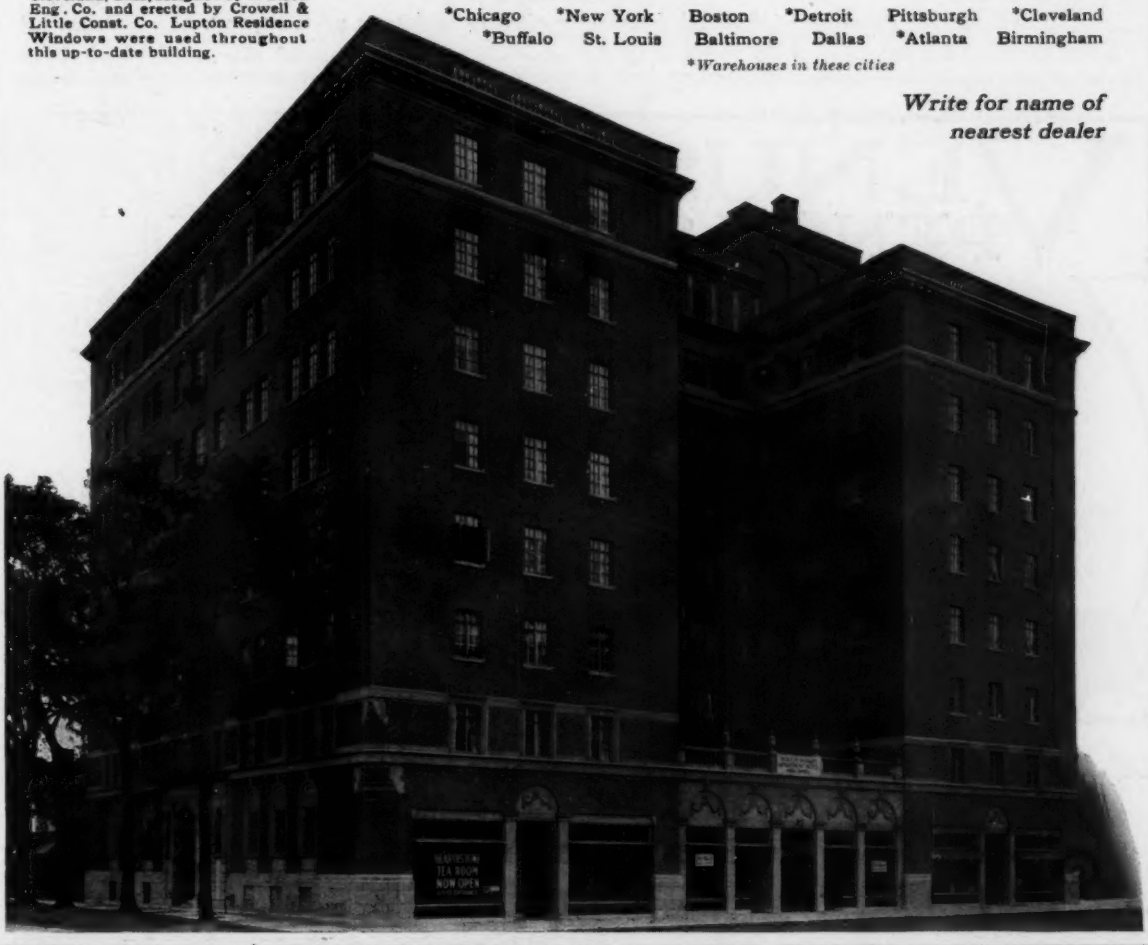

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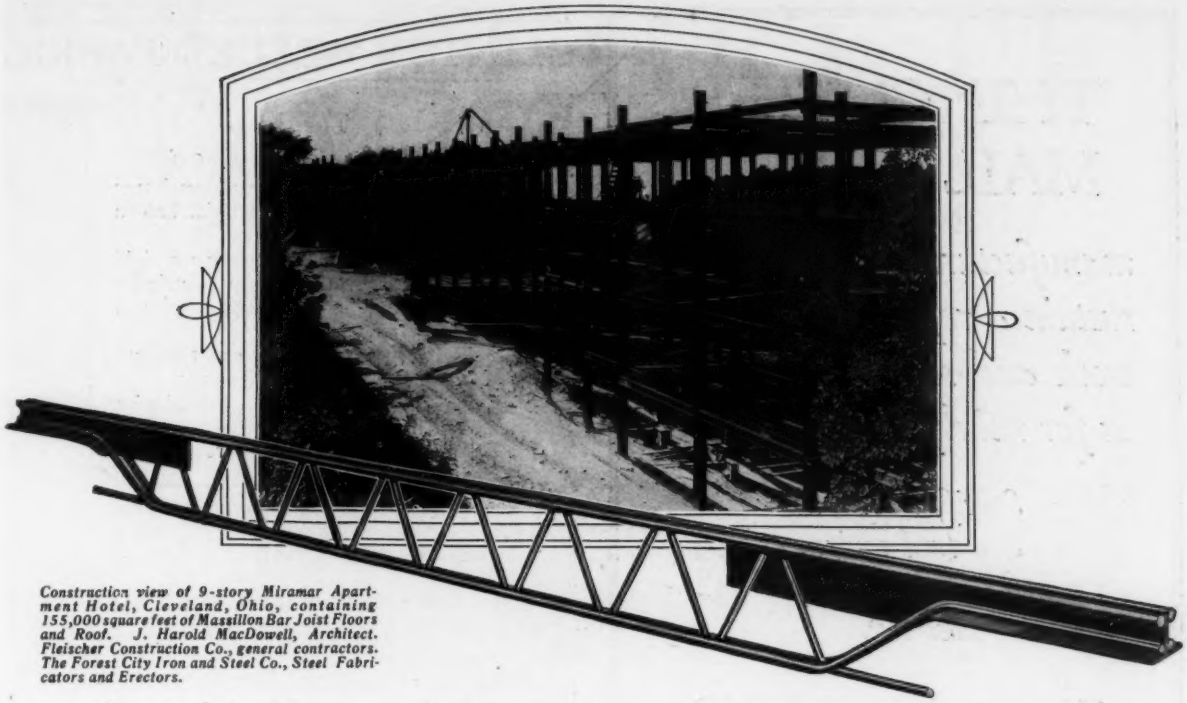

Construction view of 9-story Miramar Apartment Hotel, Cleveland, Ohio, containing 155,000 square feet of Massillon Bar Joist Floors and Roof. J. Harold MacDowell, Architect. Fleischer Construction Co., general contractors. The Forest City Iron and Steel Co., Steel Fabricators and Erectors.

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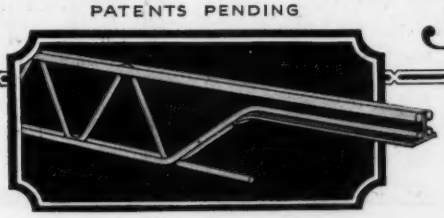

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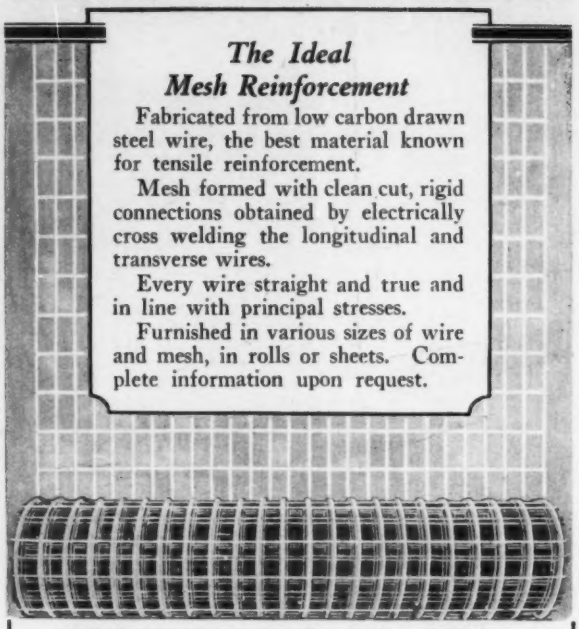

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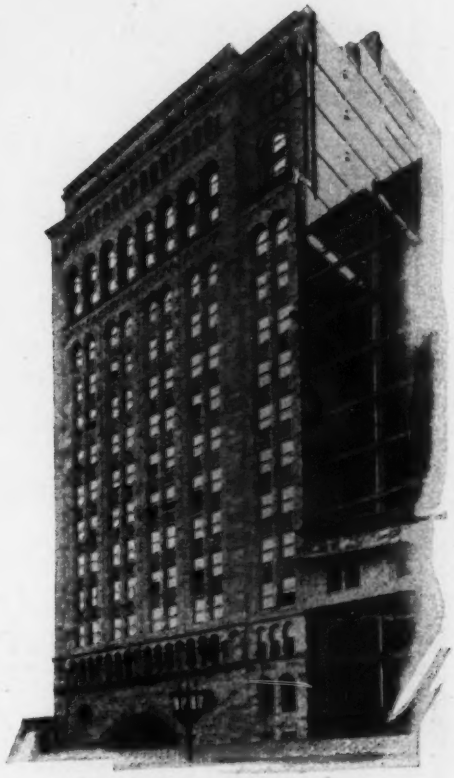

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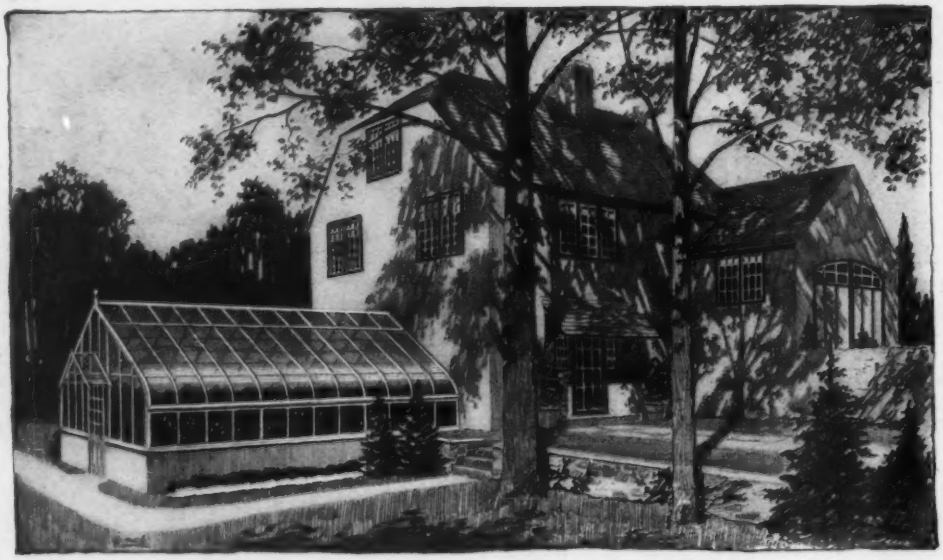

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Information on economic aspects of construction and direct service for architects on subjects allied to building, through members of THE FORUM Consultation Committee

The Building Situation

THE trend lines for October, as indicated in the chart below, picture an unusual condition —an early winter building boom. From June to October of this year the investment and volume of new building had been dropping steadily from month to month. The recovery to be noted in October is several months earlier than the similar reaction during the past few years. It is to be noted that this sudden increase in building activity is found largely in the East, particularly in New York and northern New Jersey.

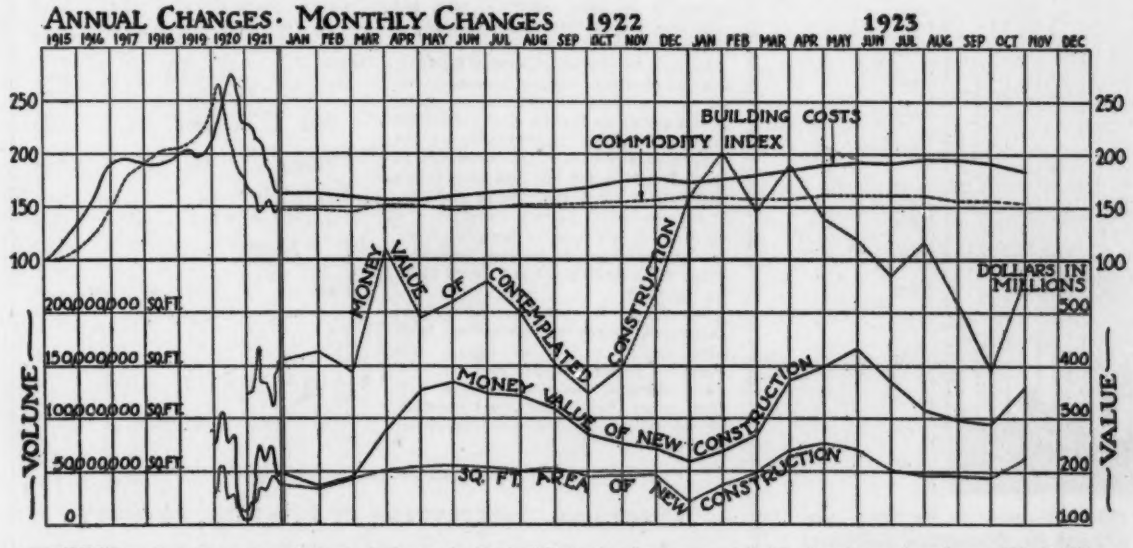
The type of building influenced by this activity is primarily residential, and there are several interesting reasons for the appearance of another building boom at this time. Probably the most fundamental reason is that large real estate operators have been watching the winter market to learn the attitude of the public in renting apartment building space this fall. Practically all buildings in the New York area have been filled without any material reduction in rentals, and this has caused a great many large projects to come into the building market now.

A strong influence on this situation we believe to have been a more intelligent consideration of the possibilities of winter building. This has been the subject of a deliberate effort on the part of architects, contractors and bankers to eliminate peak of activity in the building industry and spread out the work in a manner more beneficial to all concerned.

The line indicating contemplated construction for an ensuing period has also shown a sharp up-turn, which continues through November, as will be indicated on the chart presented next month.

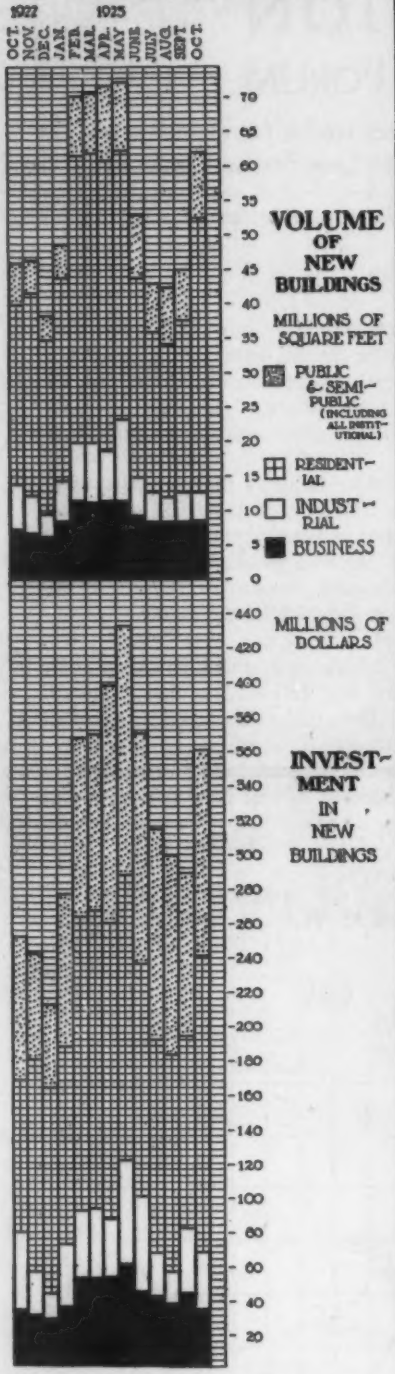
In examining this line in the chart below it will be found that a definite movement in actual new building investment has followed a sharp upward turn of the trend line, taking the money value of contemplated construction which is based on the value of new plans filed throughout the country.

Beginning on page 306 of this issue will be found a complete analysis of the unusual building activity of the past three years.



THESE various important factors of change in the building situation are recorded in the chart given here: (1) *Building Costs.* This includes the cost of labor and materials; the index point is a composite of all available reports in basic materials and labor costs under national averages. (2) *Commodity Index.* Index figure determined by the United States Department of Labor. (3) *Money Value of Contemplated Construction.* Value of building for which plans have been filed based on reports of the United States Chamber of Commerce, F. W. Dodge Co., and *Engineering News-Record.* (4) *Money Value of New Construction.* Total valuation of all contracts actually let. The dollar scale is at the right of the chart in millions. (5) *Square Foot Area of New Construction.* The measured volume of new buildings. The square foot measure is at the left of the chart. The variation of distances between the value and volume lines represent a square foot cost which is determined first, by the trend of building costs, and second, by the quality of construction.

BUILDING VOLUME AND INVESTMENT RECORD



THE above chart in the upper part indicates the approximate division of the money invested in new building, and in the lower part the number of square feet represented by new construction. Building construction is divided into four general classes, permitting the relative importance of each field to be visualized, while the total of each monthly column shows the entire volume of investment.

MONTHLY TREND OF BUILDING COSTS

Believing that Dec. 1 will mark the turn of basic building material price movements upward, somewhat as May 20, 1920, marked the peak bend downward of the same commodities, the current Dow Service Daily Building Reports compare record high levels with those of Sept. 1 of this year, when the autumnal price slumps usually occur, together with closing November, 1923, prices.

Basic building materials that recently recorded price cuts, like cement and brick, are edging for higher prices. Lumber, sand, gravel and crushed stone and glass feel the pressure of an unexpected winter demand. Metals are not so plastic in the buyers' hands and New Jersey terra cotta fireproofing finds a healthy market here for big operations in spite of a price cut on Western made competing materials.

Searching for tangible reasons for these most unusual fall building market conditions The Dow Service Daily Building Reports show that national permits granted this year as compared with the same ten months show a gain of approximately a hundred million dollars resulting in a state of unpreparedness as far as basic national building material domestic reserves are concerned without contemplating Japanese disaster reconstruction needs.

Cement stocks on hand ten months ended Oct. 31 are only 448,000 barrels in all the mills of the country in excess of last year's stocks on hand Nov. 1, in spite of a winter demand for this material twice as great as that of a year ago.

This, too, in the face of a production in the first ten months of this year of 114,366,000 barrels as against 93,850,000 barrels in the same period in 1922, and shipments 118,892,000 barrels this year as against 101,538,000 a year ago.

Lumber, by way of illustrating the effect this out-of-season building movement has had upon building material reserves, shows a 1923 cut in ten months of 12,147,320,940 board feet against 10,306,851,045 in the same months last year and shipments of 11,597,635,523 board feet this year versus 9,707,553,141 board feet shipped last year. A national lumber reserve of less than a billion board feet bans further price drops, with a building construction movement double the dimensions of last year's building program.

New York, for example, showed last Thursday 45,000,000 domestic common brick being carted to jobs as against only 37,500,000 at this time last year.

The effects of this situation upon New York prices (and other cities throughout the country in proportion) is shown herewith:

	May 24, 1920.	Sep. 1, 1923.	Dec. 1, 1923.
Asphaltum (car lots) (T).....	$30.00	$22.50	$22.50
Brick-Common, Dom. (M) Whal.	25.00	20.00	18.00
Cement (Bbl.) Del.	4.50	3.20	3.10
Fireproofing Face Brick (M) Del. H'rv'rds	60.00	48.00	47.00
(Hollow tile) T. C. (Mpcs.)	370.00	189.50	176.00
Gypsum block 4" Hol. (pc.)	.175	.165	.165
Glass — Disc'ts off job list...	*65	*77-*78	*81
Do — Window as above...	*76	*85	*88
Gravel ¾" Cu. Yd. del'd....	$3.50	$3.25-$3.50	$3.25
Lath — Wood (M)	20.00	10.50	10.00
Lime, Finishing (bbl.) del ...	5.00	4.50	4.50
Do common (bbl.) do...	4.80	4.10	4.00
Do Hydrate fin. del. (T)	26.00	26.00	26.00
Do Com. (T) del.	22.00	21.50	21.00
Lumber—			
Y. P. flooring A sap. rift (M) ft. del.	182.50	115.00	110.00-115.00
L. L. Y. P. rough tim., 21' & under, del.	85.00	65.00	62.00-65.00
T. & G. N. C. pine roofers ⅞x5½" (M) ft. del.	72.50	45.00	40.00
No. 1 Maple flg. (M) ft. del.	225.00	120.00	120.00
Metals—			
Str'ctural stl. beams, c'ts per pound Pitts.	.0310	.025	.025
Plates, Pitts. (Tank)	.0375	.125	.025
Nails (per keg) Pitts. wire	3.10	3.00	3.00
Oil — Linseed (G) to trade less than 5 bbl. lots ...	1.66	.97	.98
Sand — Cow Bay, Del. (cu. yd.) s'w lots	2.75	2.75-3.00	3.50
Stone — Ind. limestone (St. gray) cu. ft. trade N. Y...	1.36	1.47	1.47

*Per cent.

ANALYZING THREE YEARS OF BUILDING ACTIVITY

In the first editorial section of this issue of THE ARCHITECTURAL FORUM there will be found an 8-page article with 19 graphic charts which form a complete analysis of the unusual building activity which has taken place during the years 1921, 1922 and 1923.

Anticipated building for 1924 will be discussed in the January (next) issue, based on the assembling and correlating of nearly 2,000 confidential reports from architects throughout the country.

BUILDING MATERIAL PRICES

Table Showing Average Prices Paid by Contractors for Building Materials at Local Distributing Points as of October 1, 1923. Prepared by Division of Building and Housing of the Department of Commerce from Prices Secured through the Bureau of Census

Commodities	Size or Condition	Unit	Mass. Fitchburg	Mass. Haverhill	Conn. New London	Penn. Pittsburgh	Penn. Erie	Md. Baltimore	Va. Richmond	W. Va. Fairmont	S. C. Columbia	Ga. Savannah	Mich. Detroit	Mich. Pontiac	Mich. Saginaw	Mich. Bay City	La. Shreveport	La. New Orleans	N. Dak. Grand Forks	S. Dak. Sioux Falls
Common Brick		1,000	24.00	$24.00	$30.00	$17.00	....	$20.00	$19.00	$26.00	$12.00	$14.00	$17.50	$16.00	$15.00	$18.00	$15.00	$17.75	$15.00	$18.00
Portland Cement	Excl. of containers	Bbl.	3.25	3.60	3.60	3.10	3.40	2.85	3.50	2.85	4.00	3.30	3.72	....	3.30	2.85	3.20	3.00	3.80	....
Yellow Pine No. 1	Dimension 2x4-16' S1S1E	M	....	....	....	50.00	52.00	40.00	32.00	....	....	30.00	55.00	50.00	55.00	50.00	46.00	45.00	....	....
Douglas Fir No. 1	Dimension 2x4-16' S1S1E	M	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	50.00	47.00
No. Carolina Pine No. 1	Dimension 2x4-16' S1S1E	M	....	....	....	....	52.00	....	....	53.00	25.00	....	....	....	....	....	....	....	....	....
Common Boards No. 1	1x6	M	55.00	55.00	45.00	47.00	48.00	40.00	32.00	51.00	25.00	30.00	55.00	50.00	....	48.00	50.00	45.00	48.00	47.00
Y. P. Flooring Edge Grain "C"	1x4-10'-16'	M	....	130.00	....	74.00	....	....	....	....	100.00	....	....	75.00	80.00	85.00	....	75.00	....	....
Douglas Fir V. G. No. 2	1x4-10'-16'	M	....	....	....	....	....	....	....	....	....	....	....	7.00	....	....	....	....	95.00	85.00
Red Cedar Shingles	Extra clear 16" 5 to 2	100 sq. ft.	....	6.40	6.00	6.25	7.00	11.20	7.20	7.25	....	....	6.40	7.00	7.50	7.00	....	7.50	5.00	5.20
Cypress Shingles	Extra clear 16" 5 to 2	100 sq. ft.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.75	....	....	....
Composition Shingles	Crushed slate surfaced	100 sq. ft.	....	....	....	6.25	6.50	6.00	5.48	6.25	6.25	6.50	7.25	7.00	6.00	6.00	7.70	....	....	7.50
Gypsum Plaster Board	½"	1,000 sq. ft.	....	50.00	50.00	37.50	45.00	32.50	40.00	32.00	37.00	37.50	30.00	40.00	45.00	40.00	45.00	45.00	....	32.00
Lime	Hyd. Com.	Ton	24.00	20.00	26.00	23.00	22.00	15.00	17.50	16.00	20.00	20.00	20.00	16.00	20.00	16.00	25.00	....	25.00	24.00
Building Sand		Cu. yd.	1.80	2.50	1.65	2.50	3.00	2.50	2.25	3.75	1.25	2.00	2.75	1.50	2.75	2.50	2.25	2.00	3.00	....
Crushed Stone	¾"	Ton	3.25	2.50	....	5.50	3.00	....	....	3.00	2.75	4.40	2.35	....	3.50	3.80	4.32	3.25	....	....
Wire Nails		Keg	4.10	5.00	5.05	3.50	3.65	3.75	4.05	4.00	4.25	4.05	4.00	3.75	3.80	3.85	4.60	3.75	5.50	....
Window Glass	Single A 10"x12"	50 sq. ft.	....	....	4.27	4.80	....	....	5.80	5.25	....	....	6.25	....	4.25	5.00	5.10	4.00	....	....
Hollow Tile	8"x12"x12"	Each	....	.30	.32	.20	.24	.24	.20	.26	.18	....	.20	.18	.20	.18	.22	.24	....	.19
Cast Iron Soil Pipe	4" E.H. 13 lbs. per ft.	Ton	....	....	....	55.00	....	62.00	....	88.00	....	....	64.96	....	69.80	90.00	106.25	75.00	....	....
Steel Pipe	1" galv.	100 ft.	....	....	....	9.86	....	9.88	10.00	10.00	11.87	9.46	8.50	9.00	10.66	9.75	11.95	9.97	....	....
Reinforcement Bars	¾" square	100 lbs.	3.75	....	....	4.00	....	3.55	3.35	3.50	4.50	5.00	3.50	3.50	3.75	3.70	4.00	3.75	....	....
Structural Steel	Fab. 6" I-beams	100 lbs.	....	....	....	3.25	....	3.63	4.50	6.00	4.75	5.00	7.00	4.50	5.60	4.90	6.50	3.90	....	....
White Lead	Dry	100 lbs.	....	14.00	14.50	14.00	....	....	....	14.25	14.75	14.75	14.00	13.00	14.30	13.00	15.00	12.50	18.00	....
Zinc Oxide	Am. process lead free	100 lbs.	....	....	....	15.00	....	....	15.00	....	19.00	20.00	....	....	18.00	19.00	....	....	....	....
Gypsum plaster	Neat	Ton	24.00	....	26.00	22.00	24.00	19.50	....	19.00	20.00	20.00	....	17.00	20.00	17.50	24.00	22.00	27.00	14.50
Linseed Oil	Raw in bbls.	Gal.	....	1.08	1.35	.96	....	.95	1.12	1.30	1.15	1.00	1.05	1.15	.98	1.20	1.35	1.15	1.50	....
Roofing Slate	No. 1 ribbon	100 sq. ft.	....	....	....	13.50	....	....	13.50	12.50	....	....	....	17.00	17.00	17.00	12.00	15.25	....	....
Tar Paper, Roofing	2-ply 75 lbs. per roll of	100 sq. ft.	....	3.00	....	1.95	....	....	....	....	....	....	....	2.75	2.75	2.85	2.75	3.50	....	3.75
Rosin Sized Sheathing	3-ply 30 lbs. per roll of	500 sq. ft.	....	1.75	....	1.35	1.40	1.75	1.50	1.25	....	1.00	1.40	1.00	1.15	1.20	1.40	1.35	2.00	1.50

Commodities	Size or Condition	Unit	New York Poughkeepsie	New York Schenectady	New York Rochester	New York Buffalo	Ohio Cleveland	Ohio Akron	Ohio Lorain	Ohio Dayton	Iowa Waterloo	Iowa Des Moines	Iowa Council Bluffs	Spokane	Wash. Seattle	Ore. Portland	Wis. Milwaukee	Ariz. Tucson	Cal. Los Angeles	N. J. Newark
Common Brick		1,000	20.00	25.00	17.75	23.00	16.00	16.00	23.50	15.50	16.50	19.00	16.50	....	18.00	20.00	13.50	15.00	15.00	18.00
Portland Cement	Excl. of containers	Bbl.	3.30	3.25	3.35	3.03	3.48	3.50	3.60	3.12	3.00	3.40	....	....	3.00	3.00	2.66	4.40	3.36	3.50
Yellow Pine No. 1	Dimension 2x4-16' S1S1E	M	....	52.00	48.00	55.00	57.00	45.00	53.00	55.00	52.00	52.00	50.00	....	....	....	43.00	....	....	47.50
Douglas Fir No. 1	Dimension 2x4-16' S1S1E	M	49.00	....	56.00	60.00	....	....	....	55.00	50.00	52.00	48.00	30.00	23.00	23.00	....	65.00	41.50	....
No. Carolina Pine No. 1	Dimension 2x4-16' S1S1E	M	....	....	48.00	....	....	....	....	52.50	....	....	....	....	....	....	....	....	....	....
Common Boards No. 1	1x6	M	40.00	45.00	45.00	50.00	49.00	45.00	48.00	....	46.00	58.00	48.00	....	24.00	24.00	42.00	60.00	40.00	50.00
Y. P. Flooring Edge Grain "C"	1x4-10'-16'	M	....	120.00	130.00	85.00	92.00	....	....	90.00	95.00	105.00	112.00	....	....	....	....	....	....	95.00
Douglas Fir V. G. No. 2	1x4-10'-16'	M	....	....	....	115.00	....	....	....	....	95.00	95.00	100.00	80.00	66.00	55.00	....	100.00	82.75	....
Red Cedar Shingles	Extra clear 16" 5 to 2	100 sq. ft.	....	6.50	6.00	6.75	6.00	6.00	....	6.20	6.50	6.75	6.25	....	3.75	....	6.25	5.60	....	6.50
Cypress Shingles	Extra clear 16" 5 to 2	100 sq. ft.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Composition Shingles	Crushed slate surfaced	100 sq. ft.	....	7.25	....	....	6.20	5.75	....	6.50	7.50	6.00	....	....	....	6.60	6.75	....	....	6.75
Gypsum Plaster Board	½"	1,000 sq. ft.	50.00	45.00	30.00	45.00	....	27.60	....	32.50	36.00	42.00	....	....	35.00	36.63	42.00	....	35.00	45.00
Lime	Hyd. Com.	Ton	22.00	....	20.00	16.00	18.00	20.00	....	16.00	20.00	20.00	....	....	22.00	....	....	....	26.50	20.00
Building Sand		Cu. yd.	2.50	2.00	2.25	1.48	2.50	1.90	2.50	1.75	1.75	2.00	3.50	....	1.85	1.35	2.00	1.25	1.75	2.50
Crushed Stone	¾"	Ton	2.60	4.50	2.25	1.30	3.50	3.25	2.65	2.75	3.50	4.50	4.00	....	....	2.00	2.40	3.00	3.10	....
Wire Nails		Keg	5.05	....	4.25	4.25	....	3.80	3.80	4.10	4.50	4.25	5.35	4.85	4.35	4.35	3.75	6.25	4.50	4.00
Window Glass	Single A 10"x12"	50 sq. ft.	....	4.50	4.20	4.20	....	4.50	....	4.50	5.25	4.80	....	....	4.50	5.13	4.45	....	4.38	4.00
Hollow Tile	8"x12"x12"	Each	.23	.30	.21	.21	....	.17	.18	.21	.17	....	....	....	.20	.20	.17	....	.19	.19
Cast Iron Soil Pipe	4" E.H. 13 lbs. per ft.	Ton	....	....	72.67	63.05	....	71.82	....	....	82.00	90.00	....	100.00	95.00	91.47	97.00	....	74.00	75.00
Steel Pipe	1" galv.	100 ft.	....	....	10.52	10.00	....	10.36	....	10.50	12.00	11.25	....	13.14	14.20	12.78	10.50	14.50	12.35	10.40
Reinforcement Bars	¾" square	100 lbs.	4.50	3.75	3.60	....	....	3.90	4.35	....	4.00	3.15	3.25	....	3.20	3.50	3.25	6.00	4.25	5.00
Structural Steel	Fab. 6" I-beams	100 lbs.	5.00	5.25	4.50	3.65	....	3.50	4.10	4.50	4.95	5.00	3.65	....	5.75	6.00	....	....	6.95	....
White Lead	Dry	100 lbs.	....	....	12.60	14.00	14.00	12.00	12.50	14.00	14.50	14.50	15.50	13.00	11.75	13.25	....	15.25	13.00	13.90
Zinc Oxide	Am. process lead free	100 lbs.	....	....	....	....	....	....	....	15.00	19.00	14.75	....	....	19.00	....	....	....	17.00	....
Gypsum plaster	Neat	Ton	....	21.00	18.00	17.00	....	19.00	19.50	18.00	18.00	18.00	17.00	....	21.00	20.00	....	....	....	19.00
Linseed Oil	Raw in bbls.	Gal.	....	....	1.08	1.02	1.02	1.06	....	1.01	1.30	1.25	....	1.10	1.15	1.27	....	1.11	1.10	1.10
Roofing Slate	No. 1 ribbon	100 sq. ft.	....	....	15.00	....	....	13.50	....	15.00	18.00	18.00	....	....	....	23.00	16.50	....	....	14.00
Tar Paper, Roofing	2-ply 75 lbs. per roll of	100 sq. ft.	....	2.00	1.80	2.00	2.50	2.80	....	2.25	3.25	3.00	....	2.82	....	....	2.45	....	3.50	2.25
Rosin Sized Sheathing	3-ply 30 lbs. per roll of	500 sq. ft.	....	1.50	1.50	1.50	.90	.85	....	1.50	1.50	1.50	1.40	1.28	1.25	....	1.65	....	1.50	1.20

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THE FORUM DIGEST

A SURVEY OF IMPORTANT CURRENT ARTICLES ON BUILDING ECONOMICS AND BUSINESS CONDITIONS AFFECTING CONSTRUCTION

The Editors of this Department select from a wide range of publications matter of definite interest to Architects which would otherwise be available only through laborious effort

IMPORTANT DATA ON WINTER CONSTRUCTION

Facts and Figures Presented by Engineers and Contractors Prove That Big Savings Can Be Made on Jobs Carried on During Slack Months

ACCORDING to the New York *Times*, the movement to encourage winter building construction, not only as an economic proposition but as the best method of aiding the supply of housing to meet demand, was discussed from its various angles at two largely attended meetings of the New York Building Congress held early in December.

The consensus of opinion of engineers, contractors and builders who attended the meetings was that winter building cannot only be carried on successfully from November to March, but a very large saving can be made in the cost of labor and materials.

Facts and figures to prove the claim were presented by several of New York's largest construction firms.

At the first meeting ways and means were discussed, while at the second gathering figures on jobs completed where big savings had been made were presented, proving the case conclusively.

Harold M. Shreve, of Carrere & Hastings, outlined generally the reasons why winter building is sound from every economic viewpoint and presented a composite chart which graphically brought out the salient facts regarding the benefits of winter building. In explaining the chart, Mr. Shreve said:

"This chart shows applications, permits to build, in 20 cities, for the United States during the year 1922-23, plotted monthly, and shows that in the spring everybody gets busy and applies for permits to build. A little later in the year they don't want so many. Last year, after they had made a splurge in March and the situation with which we are all familiar had developed, they made very much less of a fuss in April than they did in March about going ahead. There is your spring slump of last year.

"The contracts awarded in 27 states are also shown by months. The New York Building Department for the last ten years shows when people make their alterations in New York, and we have made up a composite curve showing when alterations are made in New York, this being the result of an average of ten years.

"Those are some of the things I would say can be remedied," said Mr. Shreve.

"The figures have no relation one to another, so far as totals go. They only show tendencies. It looks as if somebody was getting busy this fall to do some work this winter.

"It is not only ahead of us for this winter, but it has been done during the winters that are passed, and I am going to put my little testimonial in on the side of one where we have actually effected a program and are now under way."

"There was a saving of $87,710 on this job, the building work of which cost $750,000," said John Lowry, Jr., showing a picture of a well known New York apartment house, built by his company during the winter of 1922-23.

"To offset that, the expenditures for winter construction were a total of $3,863 or about one-half of 1 per cent of the total cost of the job. This extra cost was for the protection of workers and materials and supplying the necessary heat.

"If you consider the bricklayer production in the summer of 1922—100 per cent—in the erection of this job during the winter of 1922-23, the bricklayer production was 109 per cent, or 9 per cent more than the summer of 1922.

"Comparing this with 1923, this last summer, the bricklayer production was 91 per cent. In other words, on this job, carried on during the winter, I produced 18½ per cent more brick per day per man than I was able to do this last summer on brickwork.

"Bricklayers working on the job got $10 a day. The payroll for the entire job was $28,150 for bricklayers.

"If it had been continued this last summer of 1923, the dropping off in production, or in efficiency, if you so choose to call it, would have added $5,630 to the cost of bricklaying alone. If you consider the bonus award of $4, that is, $14 per man today, the bonus would have cost $11,260 more. In other words, the brickwork on this job would have cost $16,890 in addition to the $28,150 as actually paid for bricklayers.

"The payroll on this job for bricklayers, carpenters, labor and engineers amounted to $130,667. If it had been done last summer, rather than the last winter, the dropping off in production and the bonus award would have added $25,680 to the cost.

"In addition to the saving in labor, the saving on purchases of materials in sub-contracts on this job amounted to $16,030 over the prices I was able to procure in the summer of 1922. In other words, between labor and the purchase of materials and subcontracts there was a saving of $87,710 on this job, the building work of which had cost $750,000.

"To offset that, the expenditures for winter construction were as follows: Temporary protection to labor and material, $871; tarpaulins cost $667, with a salvage of $442, net cost $225; temporary heat, salamanders, cost $668; salamanders, $302; coke, $302; boiler attendants, labor, $1,036; coal for boiler heating, $150; temporary lighting, labor and service, $196; snow clearing, $111; a total of $3,863, or about one-half of 1 per cent of the total cost of the job.

"Bear in mind that the labor saving was $25,680 and the material and subcontract saving was $62,000 to offset $3,863 winter protection cost.

"Charles M. Schwab realized the value of winter construction. As a matter of fact, some time ago he gave me an order to build half a million dollars' worth of buildings.

"They could be built next summer just as well as this winter. He required that they be finished on Sept. 1, 1924. The work is in course of construction now. I have some of it enclosed and some of it in the open. I will keep my gang steadily employed the winter through, in bad days working inside and on good days on the outside. Through this means I will save many thousands of dollars in the course of construction.

"Build in winter and keep the architect, builder and subcontractor and labor busy. It will better balance up the industry."

That working with concrete during the cold season is practical from every standpoint was explained by W. J. Barney, President of the Barney-Ahlers Construction Company. He placed himself on record that "more winter construction is the

acknowledged remedy for seasonal unemployment in the building industry."

"You have been told forcibly of the social and economic evil of seasonal unemployment for the carpenters, the bricklayers, in fact, for all those who directly do the work of our industry," said Mr. Barney, "and to many this problem of seasonal employment seems to be solely a picture of its hardship to the mechanics and workers in the various trades.

"This is but the sharp foreground of the picture; its larger background shows that where the mechanic is unemployed also are unemployed the contractor, material manufacturer, the architect and all others involved in our great industry—we one and all suffer from this curse of seasonal variation in the volume of our business, and finally in the horizon you see the public paying during the period of intense activity higher wages, higher prices and larger fees to compensate for the period of enforced idleness, during which the mechanic must live on his earnings' savings, the contractor carry his overhead, the architect maintain his staff and the material manufacturer offset his plant investment and factory overhead.

"In short, this is not a problem whose solution will be beneficial to mechanics alone, but is one in which all sections of this Building Congress are vitally interested, and to which they could all well afford to contribute liberally for its solution, through the more even distribution of construction throughout the entire year.

"I have had our estimating department take from their files typical estimates, and using these various factors, the same building would have been estimated by us in August at $208,000 and estimated by us today for winter construction at $203,000, showing a saving to the owner of at least $5,000, or 5 per cent, this including all cost of winter protection. Therefore, under present labor and material conditions, it is certainly conservative to say that winter construction costs no more than summer work."

FORECAST OF SPRING BUILDING CONDITIONS

ACCORDING to *The Constructor*, "conditions affecting construction activities next spring will be closely similar in character to those which prevailed at the opening of the eccentric building season of 1923, following indications drawn from statements of leading general contractors and other observers of the trend of operations. With these statements, made exclusively for *The Constructor* the publications of the Associated General Contractors of America, stripped of localism, also seem to agree, in the thought that owners and others will do well to use caution next year in timing their operations, lest a 'mad market' for labor and materials, such as threatened early this year be encountered and the entire situation demoralized.

"The belief in some quarters, as expressed in the statements published in the current issue of *The Constructor*, also seems to be that an unusual amount of work is to be undertaken for completion during the first months of 1924. In some sections of the country, where the deficiency in buildings is especially noted, leaders are advocating that winter construction be urged, with a softening of prices of materials and of wages being held as inducement for this step to be taken to avert an extraordinary demand during the months when construction ordinarily is placed under way.

"Many of these individual statements deal directly with the question of whether curtailment of operations, such as was advocated and initiated by the Associated General Contractors of America last spring, be held as policy next year to avoid runaway prices of materials and costs of labor, or whether a relaxation, perhaps entire absence of action, will be more advisable."

Quotations from a number of the statements appearing in *The Constructor* follow:

James Baird, George A. Fuller Co., New York—"Judging from the permit record covering the period of June, July and August, there is assurance the country in general having a large building program for this coming year; consequently, I look for a very serious labor shortage again in the spring. There is so much speculative work contemplated that I do not think it would be desirable to encourage it too much. Personally, I would prefer to see a reasonable amount of the work postponed until we are assured of a more ample supply of labor and material."

H. W. Baum, H. W. Baum Company, Salt Lake City—"It is our opinion that there is not likely to be a situation during the coming year which will require curtailment in any substantial form in the construction activities of the inter-mountain district."

L. C. Wason, Aberthaw Company, Boston—"My forecast for the future is that there will be slight reduction in building costs through the winter, due to softer spots in the material markets and increased labor efficiency, but that the usual spring building activity will bring costs back to about the present level. Therefore, a 'Build Now' campaign for fall and winter is in the line for stabilizing the industry and giving the investors a square deal."

Sumner Sollitt, Sumner Sollitt Company, Chicago—"Men available for construction are not now plentiful. I thoroughly believe that no propaganda at the present time, either for obstructing or accelerating the desire for contemplated construction, is necessary. Moderate price residential work will go ahead in volume just as soon as owners are sure they can obtain value received. Building construction on railroads is becoming more active and certainly much is contemplated. Manufacturers seem to have had a good year and expansion seems to be still their desire."

W. F. Austin, W. E. Wood Company, Detroit—"It would seem to us, from our very limited knowledge of the situation, that the safest plan would be to advocate that for the next six months, at least, the building construction be confined to those structures most urgently necessary. Doing this not with the idea that costs may be lowered after that period, but with the thought that unless something of this kind is done costs will again reach the point where a general let-up and universal discontinuation of construction operations will be the result."

A. S. Downey, A. W. Quist Company, Seattle—"Taking everything into consideration, it would seem a wise policy at this time to encourage building construction so that we may gradually bring our building program to meet the present demands."

Henry Ericsson, Henry Ericsson Company, Chicago—"The after-effect of the war had a very peculiar influence on things in general. It seems to me that everybody is having more money and lives on a higher plane than before the war; this creates a demand for more new buildings than were required before the war. That is one of the reasons for the building rush in the past and it may be the reason for its continuance for another year or two."

S. B. Haux, The American Construction Co., Houston—"It is my observation in this locality that further curtailment of building operations is essential to the good of the cause, due to the unprecedented demand of labor."

Otto M. Eidlitz, Mark Eidlitz & Son, New York—"I believe that wages are probably fixed for the next two years, and that the price of building materials will vary somewhat during the winter months. The work that would normally come out to meet the still unsatisfied demand for housing and additional business accommodations, as well as the starting up of the work that has been held up during this year, will make 1924 a big year in the building industry."

T. T. Flagler, The Flagler Company, Atlanta—"This is a very general view. In particular we are interested in construction only in the South and throughout this territory it is my opinion that further building under present conditions will be profitable to the owners in something like

90 per cent of the territory we cover, and this is the real criterion which should cover the volume of construction."

Archibald M. Woodruff, Third Vice-president, Prudential Insurance Company—"At the present time we are having a very large demand for mortgage loans to be secured by complete structures, and we have recently declined a number of applications for construction loans. From the information we have received, it is my opinion that there will be an excessive demand for labor in connection with building construction work for several months at least, particularly in our larger cities."

H. C. Turner, Turner Construction Company, New York—"As to business conditions in the future, most of the factors seem favorable for good business, but we have had a bad wheat situation, a disorganizing oil industry and uncertain legislative prospects. Having in mind the great volume of work offered this past eight months, only a part of which could be built, it would seem foolish if the country did not give full employment to all competent workmen during the coming winter and year 1924."

The President of a Leading Engineering Society—"I am glad that the construction program was curtailed some few months ago, and while I think that at this season it is not likely to run away, yet I believe that caution is necessary lest the program for the next year be made too ambitious and we start out at the beginning of the 1924 construction season with a bigger program than can be put over, with the consequent result that the precedents will be artificially boosted."

The Comptroller of a Leading Life Insurance Company—"As to the trend of construction activities, I do not see any likelihood that they will be diminished. I think the country is still behind in its construction program as to buildings used for residence purposes and business buildings. I have no information on factories, as we do not lend on factory properties, but I think it is likely that it will be some time before the building program has reached the saturation point."

H. N. Leighton, H. N. Leighton Company, Minneapolis—"As to the advisability of relaxing the curtailment of building operations advocated earlier in the year, it is our judgment that this should be done. This statement is based on the impression which has come to us especially during the past six months, during which time there has been a very pronounced decrease in the amount of work offered for figures, and if anything can be done to counteract this tendency it would seem to be highly advisable."

L. J. Horowitz, Thompson-Starrett Co., New York—"I am of the opinion that conditions have been considerably improved but that the time has not yet arrived when it can be said that the industry has been stabilized to a sufficient extent to make it prudent for an owner to embark upon a building operation to which he is not committed. There will, of course, be exceptions to this rule. There are some situations which will warrant an owner in proceeding notwithstanding high costs, because his needs for space are so great as to overshadow the disadvantage of high costs."

BIGGEST REAL ESTATE BOOM IS INDICATED IN NATIONAL SURVEY

Activity in Nine Months Just Closed Is Greatest in the History of the Country—Approaching Stabilization

THAT the most active period in American real estate history was that comprised in the last nine months is the conclusion reached in a survey just issued by the National Association of Real Estate Boards. According to the report, rent costs and building supply are nationally approaching stabilization, says the New York *World*, and the greatest construction need is small houses for single families.

The American real estate market, called in the survey a conservative index of American business conditions, has been more active during the season just coming to a close than during any other season in the business history of the continent, Canada being included in the estimate.

Findings of the survey, constituting a careful barometric reading for a basic section of American business activity, are based on reports of constituent real estate boards in 240 cities.

Approaching stabilization of several of the factors that underlie the present unprecedented national real estate activity is indicated, the survey finds. While it is impossible to predict with certainty the course the market will take in 1924, the situation at present seems to point to a continuation of activity, and there are some indications that 1924 will surpass the present banner year, the summary states.

Indications found of interest to renters, property owners, investors, builders and to students of the general business trend are as follows:

More transfers of real property were recorded and more buildings were erected during the first nine months of 1923 than during the same period of any year in the history of the American continent.

Rents have increased largely the country over, both for business and for residential property, but in general they are becoming stabilized at the present levels. Residential rentals show the stabilizing tendency more strongly than business rentals. The situation is more favorable toward stabilization in cities of over 200,000 population, 72 per cent of which report residential rents stationary.

Rents are following the course of the cost of building. While according to the most authentic index of living costs rents are now 25 points higher than other commodities, present rents are low compared with the cost of construction. Before rents decrease perceptibly there must be a decrease in the cost of building.

Great inroads are being made in the national building shortage, which was so pronounced after the war. Shortage is most acute apparently in the East and Far West. There is prevalent throughout the reports the impression that the supply of housing accommodations and business structures is about to reach a state of equilibrium between supply and demand.

The greatest demand at the present time in the real estate market is for small single-family dwellings. Sixty-eight per cent of the cities reporting indicate a shortage here, whereas only 54 per cent report a shortage in apartment houses. Only 43 per cent report a shortage in business structures.

Amount and value of building construction have been extraordinary, making it safe to assume that the increase of 23 per cent over the record year 1922, maintained, according to the United States Bureau of Labor statistics, for the first six months of 1923, will be fairly well maintained for the whole year if not made still greater, despite the failure to top last year's June building crest.

Of 236 cities answering, 223 state that with all the tremendous construction there is no overbuilding of any kind.

The surburban movement in the larger cities, pronounced tendency of present-day city growth, is, generally speaking, greater than last year, and is likely to be continued.

Money for investment in real estate is comparatively plentiful. Interest rates are reasonable in nearly every section.

The market for business property is reported better than last year by 57 per cent of the real estate boards contributing to the survey. The market for residential property is reported better than last year by 55 per cent of the boards.

Los Angeles tops the principal cities of the country in gains shown over last year in real estate transfers and conveyances, with an increase for the first nine months of 46 per cent, but survey of 19 principal cities indicates that the national high water mark of 1922 has been surpassed this year by an average of 30 per cent. In only one city reporting is there a decrease shown in the number of

transfers recorded. This is Fargo, N. D. North Dakota is suffering from the low price of wheat and the adverse conditions surrounding agricultural production.

Building shortage of some kind is reported by practically all the large cities of the East. However, of 23 cities of over 200,000 population 20 report that they have caught up with their building program and may be considered normal. Business structures have made the most rapid adjustment.

The labor situation in the building trades is reported encouraging. Labor supply is stated to be sufficient in 49 per cent of the cities, and 76 per cent report the situation the same or better than last year. In nearly 50 per cent of the cities wages are reported higher, but bonuses paid in the summer rush season are disappearing. Increases in numbers of apprentices in some trades point to relief.

While there is at present an inclination for prices of building materials to decline, the survey finds no reason to suspect that the price will decrease perceptibly. And so long as the cost of labor remains at its present level it is doubtful whether the nation can experience any decrease in the cost of housing accommodations.

Acceleration of the movement toward subdivisions, result of the crowding and constant growth of larger cities, is reported by 70 per cent of the cities answering the questionnaire. While the movement may not increase particularly in the future, it may be expected to maintain a constant level.

BUILDING TRADE WAGES IN NEW YORK TO STAY AT 1923 LEVELS

THE Building Trades Employers' Association announced recently a decision to maintain through 1924 the same wage scale and bonus paid building trades unionists throughout 1923. The employers reported that a survey of the situation demonstrated that higher wages would impede and perhaps halt construction now needed badly.

The willingness of the association to hold to the "peak" wages now being paid was disclosed by Christian Norman, Chairman of the Board of Governors, who said that inquiry among speculative builders and investors revealed that their boom plans for the forthcoming year were predicated on the assumption that wages could not go higher.

A short time ago the old Building Trades Council made a request to the employers to continue the 1923 wage and bonus through 1924, but to add $1 to the daily pay. According to statisticians employed by the Building Trades Employers' Association this extra $1 a day would add from $10,000,000 to $25,000,000 to the cost to owners and contractors.

Wage Increases in Nine Years

The employers' table, showing increases in the last nine years, follows:

Classification of worker	Daily wage, 1914.	1923.	Pc. inc.
Glaziers	$3.14	$10.00	218.5
Electrical workers' helpers	2.20	6.50	195.4
Cement masons' laborers	2.62	7.50	186.2
Houseshorers	3.68	10.00	171.7
Bricklayers' laborers	3.00	8.00	166.6
Steamfitters' helpers	3.00	8.00	166.6
Asbestos workers' helpers	3.00	8.00	166,6
Plasterers' laborers	3.25	8.50	161.5
Composition roofers	3.50	9.00	157.1
Stone bedrubbers, large side	3.50	9.00	157.1
Carpenters (Richmond)	4.00	10.00	150.
Stone masons	4.80	12.00	150.
Painters and decorators	4.00	10.00	150.
Stone handrubbers, etc	2.75	6.80	147.2
Mosaic helpers	3.25	8.00	146.1
Derrickmen and riggers	4.00	9.50	137.5
Stone, crane operators, etc	3.00	7.10	136.6
Art glass workers	3.82	9.00	135.6
Elevator constructors' hlprs	3.40	8.00	135.3
Tile layers' helpers	3.00	7.00	133.3
Marble workers' helpers	3.50	8.00	128.5
Housesmith finishers' hlprs	3.50	8.00	128.5
Stone bedrubbers, rear side	3.50	8.00	128.5
Carpenters (Bronx, Brooklyn, Queens)	4.50	10.00	122.2
Mosaic workers	4.50	10.00	122.2
Roofers, slate	5.50	12.00	118.1
Plasterers	5.50	12.00	118.1
Marble polishers	4.40	9.50	115.9
Stone sawyers	3.50	7.45	112.8
Asbestos workers	4.75	10.00	110.5
Electrical workers	4.80	10.00	108.3
Marble sawyers	4.68	9.50	102.9
Housesmiths, structural	5.00	10.00	100.
Housesmiths, finishers	5.00	10.00	100.
Cement masons	5.00	10.00	100.
Carpenters (Manhattan)	5.00	10.00	100.
Metallic lathers	5.00	10.00	100.
Sheet metal workers	5.00	10.00	100.
Engineers, hoisting	6.00	12.00	100.
Bricklayers	6.00	12.00	100.
Stone setters	6.00	12.00	100.
Marble carvers	6.00	12.00	100.
Stone planermen	4.25	8.35	96.4
Marble bedrubbers	4.95	9.50	91.9
Marble cutters and setters	5.50	10.50	90.9
Elevator constructors	5.28	10.00	89.3
Plumbers	5.50	10.00	81.8
Steamfitters	5.50	10.00	81.8
Stone cutters	5.50	10.00	81.8
Tile layers	5.50	10.00	81.8

Little Prospect of Strike

Likelihood that a strike would result from the decision of the employers to maintain the present rate of pay seems to be decidedly remote. It was pointed out that both employer and union were bound by a pledge to submit all controversies to arbitration. A clause provides that work shall be continued pending negotiations and if the arbiters report favorably on the union's claims, the allowed advance is made retroactive.

PRACTICABILITY OF EIGHT-HOUR DAY IN STEEL INDUSTRY

IN reference to the question recently raised as to the practicability of the 8-hour day in the steel industry of the United States, the Federal Council of the Churches of Christ in America has obtained permission from Raymond B. Fosdick to reprint the following letter received by Mr. Fosdick from J. F. Welborn, President of the Colorado Fuel and Iron Company. Mr. Fosdick is a member of the Board of the Colorado Fuel and Iron Company, representing the interests of John D. Rockefeller, Junior, on that Board.

"The change, as you know, was made November 1, 1918, the hourly, tonnage and piece rates being increased 10 per cent when the working shift was reduced from 12 to 8 hours. Our rates, prior to November 1, 1918, had always been on the same basis as the steel industry generally paid in the East.

"The changes, both in working hours and basic rates, were arranged at conferences between officials of the company and representatives of the employes and followed numerous requests, made by employes, after the adoption of our Employes' Representation Plan early in 1916, that the 12-hour work shift be eliminated.

"The immediate results, from the standpoint of production per man hour, and of labor cost per unit of output, were satisfactory, and where conditions have been comparable, it has been evident that we have lost nothing either in producing cost or output by reason of the change.

"At blast furnaces the labor cost per ton, immediately following the introduction of the 8-hour day with the increase of 10 per cent in wage rates, increased slightly over 1 per cent above former costs. At open hearth furnaces it increased 1½ per cent, while at our rolling mills there was a substantial reduction in the labor cost per ton.

"Recent careful analyses of operating results between various 12- and 8-hour work periods have been made and show these results to be even more satisfactory than we had realized before. The trends of production per man hour, with unimportant exceptions, have been upward since the adoption of the 8-hour day; and in every department of our steel manufacturing operations, from blast furnace to the wire mill, our production per man hour is now greater than it was when all of these activities were operating on the 12-hour shift. Comparing these results of the last few months with periods of similar production when basic rates were 10 per cent lower than current rates and the working time 12 hours per day, we find that almost without exception our labor cost per ton is lower than in the earlier periods.

"Furthermore, whenever the question of change made in the length of the working day has come up for discussion between officials and employes' representatives, satisfaction with the change has been expressed by the employes. It is obvious, therefore, that our change from a 12-hour to an 8-hour day was practical and has been successful.

"A factor of added interest is the fact that, with almost capacity operations at our steel plant during the last few months and employing over 6,000 men, we have experienced no shortage of labor. Our operating officials have frequently expressed the belief that this condition is due, in large part at least, to adoption of the 8-hour shift."

Selected List of Manufacturers' Literature

FOR THE SERVICE OF ARCHITECTS, ENGINEERS, DECORATORS, AND CONTRACTORS

The publications listed in these columns are the most important of those issued by leading manufacturers identified with the building industry. They may be had without charge, unless otherwise noted, by applying on your business stationery to *The Architectural Forum*, 383 Madison Ave., New York, or the manufacturer direct, in which case kindly mention this publication.

ACOUSTICS

Johns-Manville, Inc., Madison Ave. & 41st St., New York, N. Y.
Architectural Acoustics. Booklet. 6 x 9 in. 24 pp. Illustrated. Treatise on the correction of architectural acoustics in churches, schools, hospitals, office buildings and other places.

ASH HOISTS—ELECTRIC AND HAND POWER

Gillis & Geoghegan, 544 West Broadway, New York, N. Y.
General Catalog. 8½ x 11 in. 20 pp. Fully illustrated. Contains specifications in two forms (with manufacturer's name and without). Detail ¼" scale for each telescopic model and special material-handling section.
The Man-Saving Load Lifter, 5⅞ x 8⅞ in. 8 pp. Illustrated. Describes G&G Telescopic and Non-Telescopic Hoists for handling material in factories.

BATHROOM ACCESSORIES

The Fairfacts Company, 234 West 14th St., New York, N. Y.
Catalog F. 4 x 9 in. 12 pp. Illustrated. Describes full line of china fittings for bathrooms.
The Perfect Bathroom. Booklet. 4 x 9 in. 12 pp. Illustrated. Shows full line, Biltin and Projecting Types, installed. For architects and clients.

BOILERS—See Heating Equipment

BRICK

American Face Brick Association, 1751 Peoples Life Bldg., Chicago, Ill.
The story of Brick. Third Edition. Booklet. 7 x 9¼ in. 55 pp. Illustrated. Presents the merits of face-brick from structural and artistic standpoints. Tables of comparative costs.
The Home of Beauty. Fourth Edition. Book. 8 x 10 in. 72 pp. Color plates. Presents fifty designs for small face-brick houses submitted in national competition by architects. Text by Aymar Embury II, Architect. Price 50c.
Bungalow and small house plans. Booklets. 8½ x 11 in. 50 pp. Illustrated. Four booklets, showing a variety of designs for small face-brick houses, covering 3, 4, 5, 6, 7 and 8 room houses. Price, 25c. each, $1 for the set.
A Manual of Face-Brick Construction. Booklet. 8½ x 11 in. Textbook on construction of the brick wall and various uses of face brick. 31 colored plates of brick houses with plans. Price, $1.00.
Architectural Details in Brickwork. Series 1, 2, 3. 8½ x 11 in. Very useful to the architect or draftsman. Sent free to architects applying on their office stationery. To others $1.50.

B. Miffin Hood Brick Co., Atlanta, Ga.
Burned Clay Products. Booklet. 9½ x 12½ in. 47 pp. Illustrated. Shows different uses of brick, but presents particularly the various uses of quarrie floor tile. Free to architects and engineers.

BUILDING FINANCE

S. W. Straus & Co., 565 Fifth Ave., New York, N. Y.
The Straus Plan of Financing. Booklet. 8 x 6 in. 24 pp. Illustrated. Describes Straus system of co-operating with Architects, Builders, Engineers and Brokers in financing important building operations; also the making of construction loans on larger and better properties in our large cities.
Forty-one Years Without Loss to Any Investor. Booklet. 8 x 5 in. 38 pp. Illustrated. A carefully prepared booklet for the thinking investor. Describes Straus bonds, the property upon which loans are made, and explains the Straus plan of safeguards which made possible the 41-year record.

BUILDING STONE—See Stone, Building

BUILDING, STANDARD STEEL

Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.
Truscon Standard Building Catalog. 8½ x 11 in. 48 pp. Contains data and illustrations.

BUILDING, STEEL PRODUCTS FOR

Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.
Truscon Data Book. Catalog. 3½ x 6 in. 128 pp. Illustrated. Contains complete information with illustrations on Truscon reinforcing steel, steel windows, metal lath, standard buildings, concrete inserts, steel joists, pressed steel stamping and chemical products.

CEMENT

Carney Company, The, Mankato, Minn. Booklet. 8 x 10 in. 24 pp. Illustrated. Complete information on product, showing prominent buildings in which this cement has been used.

Louisville Cement Co., 315 Guthrie St., Louisville, Ky.
Brixment. Booklet. 7½ x 5 in. 16 pp. Illustrated. Brixment, what it is, what it does, how it does it and why.

Sandusky Cement Co., Dept. F, Cleveland, Ohio.
Medusa Waterproof White Portland Cement. Booklet. 8½ x 11 in. 32 pp. Illustrated.
Medusa Integral Waterproofing Powder and Paste. Booklet. 8½ x 11 in. 88 pp. and cover.

CONDUIT

National Metal Molding Co., 1113 Fulton Building, Pittsburgh, Pa.
Bulletin of all National Metal Molding Products. In correspondence folder. 9½ x 11½ in.
Sheraduct. Circular. 5 x 8 in. Illustrated.
Flexsteel. Circular. 5 x 8 in. Illustrated.

CONSTRUCTION, FIREPROOF

Massillon Steel Joist Co., Massillon, Ohio.
Massillon Bar Joists. Brochure. 8½ x 11 in. Illustrated. Full data regarding the steel used for constructure of floors in fireproof buildings of various kinds.

National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa.
Standard Fire Proofing Bulletin 171. 8½ x 11 in. 32 pp. Illustrated. A treatise on fire proof floor construction.

CONSTRUCTION, FIREPROOF—Continued

Northwestern Expanded Metal Co., 934 Old Colony Building, Chicago, Ill.
Fireproof Construction Catalog, 6 x 9 in. 72 pp. Illustrated. Handbook of practical suggestions for architects and contractors. Describing Nemeo Expanded Metal Lath.
Fireproof Construction. Catalog. 6 x 9 in. 72 pp. Illustrated. Describing Kno-Burn expanded metal lath.

DAMPPROOFING

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.
Specification Sheet. 8½ x 11 in. Descriptions and specifications of compounds for dampproofing interior and exterior surfaces.

DECORATIVE TILES

The Rookwood Pottery Company, Cincinnati, Ohio.
Halftone reproductions and photographic prints showing various tile treatments. 9½ x 11½ in.

DOORS AND TRIM, METAL

The American Brass Company, Waterbury, Conn.
Illustrated pamphlet describing use and adaptability of Extruded Architectural Bronze Shapes for metal window frames, doors, grilles, counter screens, etc.

The Compound & Pyrono Door Company, St. Joseph, Mich.
Pyrono Handbook for Architects and Contractors. 8½ x 11 in. 16 pp. Contains full information regarding Pyrono Fireproof Veneered Doors and Trim, with complete details and specifications.
Pyrono details in sheet form for tracing.

Dahlstrom Metallic Door Company, 425 Buffalo Street, Jamestown, N. Y.
Architectural Catalog. 10 x 14 in. 46 pp. 11 sections. Illustrated. Catalog showing our regular styles and types of hollow metal doors and interior trim. Various types of frames and other architectural shapes also illustrated.

Richards-Wilcox Mfg. Co., Aurora, Ill.
Fire Doors and Hardware. Booklet. 8½ x 11 in. 64 pp. Illustrated. Describes entire line of tin-clad and corrugated fire-doors, complete with automatic closers, track hangers and all the latest equipment—all approved and labeled by Underwriters' Laboratories.

The J. G. Wilson Corporation, 11 East 36th St., New York, N. Y.
Rolling Doors and Shutters. Book. 8½ x 11 in. 72 pages. Illustrated. Contains specifications, details, dimensions and photographs.
Doors for Industrial Buildings. Booklet. 8½ x 11 in. 16 pp. Illustrated. Data covering different types of doors made for industrial structures.

DRAFTING MATERIALS

American Lead Pencil Company, 220 Fifth Ave., New York, N. Y.
VENUS Pencil in Mechanical Drafting. Booklet C20. 6 x 9 in. 16 pp. Illustrated. Describes the many possibilities of the VENUS for technical drawing.
Catalog. 3¾ x 8¾ in. 25 pp. Illustrated. Describes pencils, holders, erasers, etc.

DUMBWAITERS

Kaestner & Hecht Co., Chicago, Ill.
Bulletin 520. Describes K. & H. Co. electric dumbwaiters. 8 pp.

Sedgwick Machine Works, 151 West 15th Street, New York.
Catalog and Service Sheets. Standard specifications, plans and prices for various types, etc. 4¼ x 8¼ in. 60 pp. Illustrated.

ELECTRICAL EQUIPMENT

The Arrow Electric Company, Hartford, Connecticut.
Catalog of Complete Wiring Devices. 7½ x 10 in. 160 pages. Illustrated. Also small pocket edition.
Manual of Electrical Wiring Devices for Use in Limited Space. This manual will be very useful in the installation of receptacles and switches in shallow partitions as it gives specifications for such work.
Specification sheets for Arrow flush tumbler switches, shallow flush push button switches and double T slot flush receptacles.

Connecticut Electric Mfg. Co., Bridgeport, Conn.
Up-to-date Electrical Specialties Pocket Catalog. 3 x 4¾ in. 305 pp. Illustrated. Gives size, weight, prices and data for sockets, receptacles, rosettes, switches, cut-outs and other wiring devices.
Connecticut Toggles Switches Folder. 3½ x 6½ in. 4 pp. Illustrated. Describes latest idea in electric switch and gives list price, catalog numbers and schedules.
Connecticut Sockets. Folder. 3½ x 6½ in. 6 pp. Illustrated. Describes Key-Keyless and Push Button Sockets and gives prices and catalog numbers.

Frink, Inc., I. P., 24th Street and 10th Avenue, New York, N. Y.
Catalog 415. 8½ x 11 in. 46 pp. Photographs and scaled cross-sections. Specialized bank lighting, screen and partition reflectors, double and single desk reflectors and Polaralite Signs.

General Electric Company, Schenectady, N. Y.
Wires and Cables. Booklet. 8 x 10¾ in. 85 pp. Illustrated. Four Bulletins in a binder, describing wires and cables in general, conductor insulated with vulcanized rubber compound, varnished cambre and paper insulated cables, splicing materials and junction boxes for cable installations, armored cables.
Electric Fans. Folder. 6 pp. 3¼ x 6 in. Illustrated. Describes 1922 line of electric fans, giving catalog numbers, voltages and frequencies.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 89*

ELECTRICAL EQUIPMENT—Continued

Reliable Wiring Devices. Catalog. 3 x 4⅛ in. 206 pp. Illustrated. Pocket catalog giving prices, schedule classifications and data for socket receptacles, switches, rosettes, cutouts and fuses for miscellaneous devices.

Lighting of Public Buildings. Bulletin. 6 x 9 in. 25 pp. Illustrated. Describes lighting of galleries, banks, museums, libraries, municipal, county and state buildings.

The Edwin F. Guth Co., 2615 Washington Ave., St. Louis, Mo.

Bracolite Catalog No. 10, 10½ x 8 in. 28 pages. Illustrated. Catalog listing Brascolite fixtures in wide variety of plain and decorative types. Contains information of value in planning a lighting installation.

Bank and Office Building Catalog, 10½ x 8 in. 16 pages. Illustrated. Catalog listing a selected line of fixture equipment for application to all outlets in bank or office building or similar buildings.

Architectural Bulletins, Series of 5. 10½ x 8 in. 28-64-44-28-44 pages. Illustrated. A series of five bulletins, each treating upon the application of lighting to one particular class of service. Hospitals; Banks and Office Buildings; Schools, Colleges and Y. M. C. A. Buildings; Church and Fraternal Buildings; Commercial Service.

Special Hospital Catalog. 10½ x 8 in. 9 pages. Illustrated. Illustrates a special selection of fixture equipment for hospital use including types suitable for all outlets.

Hart & Hegeman Mfg. Co., 342 Capitol Ave., Hartford. Conn.

A new H & H Switch. Leaflet. 3½ x 6 in. 4 pp. Illustrated. Illustrates a new H & H composition base push switch of De Luxe quality.

Tumbler Switches. Booklet. 3½ x 6 in. 6 pp. Illustrated. Shows complete line of H & H Tumbler Switches.

H & H Elexits. Booklet. 8 x 10¼ in. Illustrated. Shows new complete line of Elexits—places for lights. May be used for Wall Receptacles or Electric Fixtures.

H & H Radio Button Push Switches. Booklet. 3½ x 6 in. Illustrated. Radio Luminous Buttons applied to Push Switches and Sockets.

The Holtzer-Cabot Electric Co., Amory St., Boston 19, Mass.

Signaling Systems for Hospitals. Brochure. 8½ x 11 in. 42 pp. Illustrated. Contains complete data covering Nurse's Call, Doctor's Call, "In" and "Out," Fire Alarm, Watchman's Clock and Telephone Systems.

Signaling Systems for Schools. Brochure. 8½ x 11 in. 47 pp. Illustrated. Contains complete data covering Telephone Systems, Program Bells, Fire-Alarm Systems, Low Tension Power Plant and Laboratory Equipment.

Kohler Co., Kohler, Wis.

Kohler Automatic Power and Light 110 Volt D. C. Booklet. 5 x 7 in. 32 pp. Illustrated. Describes a standard voltage automatic, electric power and light plant for isolated homes.

Simplex Wire & Cable Co., 201 Devonshire Street, Boston, Mass.

Simplex Manual Catalog and reference book. 6¾ x 4¼ in. 92 pp. Contains in addition to information regarding Simplex products, tables and data for the ready, reference of architects, electrical engineers and contractors.

Specification No. 2053. For Simcore Wires and Cables. Various sizes of Conductor-Rubber Insulation.

Standard Electric Time Co., Springfield, Mass.

Catalog of Standard Electric Time Systems. No. 35. 8¾ x 6 in. 58 pp. Illustrated. Shows all types of Standard Electric Time Devices, with full information about mechanism, construction, design and installation.

School Booklet. 8½ x 11 in. 8 pp. Illustrated. Describes completely the use of Standard Electric Time, Program and Signal Systems in schools. References included.

Industrial Booklet. 8½ x 11 in. 12 pp. Illustrated. Describes use of Standard Electric equipment in industrial establishments, with references.

Data Folder for Architects. 8½ x 11 in. Illustrated. Looseleaf folder, to be added to from time to time, giving specifications and wiring diagrams and other useful data.

Varnum Door Engine Company, 949 West 16th St., Los Angeles, Calif.

Varnum Electric Door Engines. Booklet. 5 x 7¾ in. 16 pp. Illustrated. Descriptive booklet containing illustrations and list of representative institutions now using Varnum Door Engines.

Western Electric Co., 195 Broadway, New York, N. Y.

Western Electric Inter-Phones for Apartment Houses. Booklet. 5¾ x 6¾ in. 16 pp. Illustrated. Illustrates and describes use of Inter-Phones in Apartment Houses.

Installing and Maintaining Western Electric Inter-Phones in addition to giving general information on layout of systems; details are supplied on individual Inter-Phone Systems, listing battery and wiring requirements.

Westinghouse Electric & Mfg. Company, East Pittsburgh, Pa.

Safety Switches. Folder F-4434 B. 3½ x 6 in. 2 pp. The 100 per cent Safe Service Entrance Switch.

Meter Service Switches. Booklet. F-4484. 3½ x 6 in. 16 pp.

Panel Boards. Catalog 22A. 8½ x 11 in. 16 pp. Illustrated.

What Fans Are For. Booklet F-4520. 3½ x 6 in. 16 pp. Illustrated in color.

ELEVATORS

Kaestner & Hecht Co., Chicago, Ill.

Bulletin 500. Contains 32 pp. Giving general information on passenger elevators for high buildings.

Bulletin 530. Interlocks for Passenger and Freight Elevators.

Bulletin. Signals for Passenger and Freight Elevators.

Otis Elevator Company, 11th Ave. & 26th Street, New York, N. Y.

Otis Push Button Controlled Elevators. Booklet. 6 x 9 in. 56 pp. Illustrated. Detailed description of Otis Push Button Elevators. Their uses in residences, stores, institutions, apartment houses, business offices and banks, etc.

Otis Geared and Gearless Traction Elevators of All Types. Descriptive leaflets. 8½ x 11 in. Illustrated. Full details of machines, motors and controllers for these types.

ELEVATORS—Continued

Escalators. Booklet. 8½ x 11 in. 22 pp. Illustrated. Describes use of escalators in subways, department stores, theatres and industrial buildings. Also included elevators and dock elevators.

Richards-Wilcox Mfg. Co., Aurora, Ill.

Elevators. Booklet. 8½ x 11 in. 24 pp. Illustrated. Describes complete line of "Ideal" elevator-door hardware and checking devices, also automatic safety devices.

Sedgwick Machine Works, 151 West 15th Street, New York.

Catalog and descriptive pamphlets. 4¼ x 8¼ in. 70 pp. Illustrated. Descriptive pamphlets on hand power freight elevators, sidewalk elevators, automobile elevators, etc.

FENCES

The Stewart Iron Works Company, Cincinnati, Ohio.

Book of Designs "B." 9 x 12 in. 80 pp. Illustrated. Book of designs illustrated from photographs of ornamental iron fence and entrance gates erected by us. Valuable to architects.

FIRE DOORS—See Doors, Windows and Trim, Metal

FIREPLACE EQUIPMENT

Covert Co., H. W., 137 E. 46th Street, New York, N. Y.

Hints on Fireplace Construction. Catalog. 5⅜ x 8½ in. 11 pp. Illustrated. Diagrams of construction and installation of Covert "Improved" and "Old Style" Dampers and Smoke Chambers. Also illustrations of Covert brass and wrought iron Fireplace Fittings.

FIREPROOFING—See also Construction, Fireproof

The General Fireproofing Company, Youngstown, Ohio.

Fireprofing Handbook. 64 pp. 8½ x 11 in. Illustrated. Gives methods of construction, specifications, data on Herringbone metal lath, steel tile, Trussit solid partitions, steel lumber, self-centering formless concrete construction.

FLOOR HARDENERS (CHEMICAL)

General Chemical Company, 40 Rector Street, New York City.

Hard-n-tyte Engineering Service. Booklet. 16 pp. 7½ x 10½ in. Describes Hard-n-tyte and its uses in connection with surface treatments of concrete with illustrations of specific applications.

The Hard-n-tyte Specification Folder. 2 pp. 7½ x 10½ in. Gives exact specifications for concrete floor finish.

Sample Bond. 9 x 14½ in. Duplicate of Five Year Guaranty Bond furnished on floors treated with Hard-n-tyte.

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.

Lapidolith, the liquid chemical hardener. Complete sets of specifications for every building type in which concrete floors are used, with descriptions and results of tests.

FLOORING

Armstrong Cork & Insulation Co., 132 24th Street, Pittsburgh, Pa.

Linotile Floors. Catalog. 6 x 9 in. 40 pp. Color Plates. Describes Linotile, a composition of ground cork, wood flour, linseed oil and various gums and pigments in tile form.

Armstrong's Cork Tile. Revised Edition. Booklet. 24 pp. 5 x 7 in. Illustrated in color. Contains complete specifications.

Armstrong Cork Co., (Linoleum Dept), Lancaster, Pa.

Armstrong's Linoleum Floors. Catalog. 8½ x 11 in. 54 pp. Color plates. A technical treatise on linoleum, including table of gauges and weights and specifications for installing linoleum floors.

Decorative Floors. Booklet. 11¼ x 15 in. 16 pp. Color plates.

Armstrong's Linoleum Pattern Book, 1923. Catalog. 3½ x 6 in. 168 pp. Color Plates. Reproductions in color of all patterns of linoleum and cork carpet in the Armstrong line.

Quality Sample Book. Three books. 3½ x 5¾ in. Showing all gauges and thicknesses in the Armstrong line of linoleum and cork carpets.

Detailed Directions for Laying and Caring for Linoleum. Handbook 5 x 7 in. 48 pp. Instructions for linoleum layers and others interested in learning most satisfactory methods of laying and taking care of linoleum.

Business Floors. Booklet. 6 x 9 in. 48 pp. Illustrated in color. Explains use of linoleum for offices, stores, etc., with reproductions in color of suitable patterns, also specifications and instructions for laying.

Bonded Floors Company, Inc., New York, N. Y.

Gold-Seal Treadlite Tile. Booklet. 7⅞ x 10¾ in. 32 pp. Illustrated. An illustrated booklet showing Treadlite Tile installations and containing general information, specifications, etc., with reproductions of the product in color.

Gold-Seal Rubber Tile Folder. Folder 7⅛ x 10¾ in. 8 pp. Illustrated. A folder describing the usages and composition of Rubber Tile. Profusely illustrated with pictures of installations and reproductions of the product in color.

Muller Co., Franklyn, R., Waukegan, Ill.

Asbestone Composition Flooring. Circulars, 8½ x 11 in. Descriptions and Specifications.

The Nairn Linoleum Company, 179 Belgrove Drive, Kearny, N. J.

Linoleum Booklet. 5½ x 8½ in. 68 pp. Illustrated in color. Reproductions in color of Inlaid, Printed, Plain and Battleship Linoleum; also Cork Carpets and Felt Base Floor Coverings.

Stedman Products Company, South Braintree, Mass.

Six-page folder. 8½ x 10½ in. Illustrated in colors, giving complete description of Stedman Naturized Flooring, Tiles, Wainscoting, Sanitary Bases, Stair Treads, etc. Technical data, recommendations, and special flooring service.

FURNACES—See Heating Equipment

FURNITURE

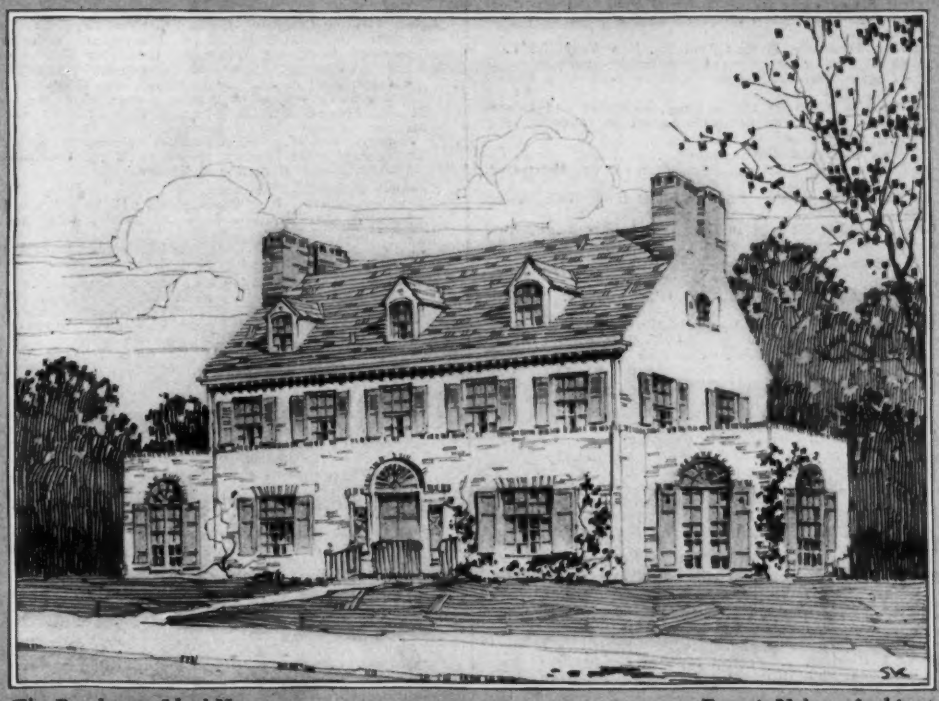
Allen, Louis L., 521 Madison Ave., New York, N. Y.

Booklet. 5 x 7½ in. Illustrated. Issued twice a year, listing many antique pieces of furniture, old oak and pine paneling and garden figures: fountains, bird baths, sundials, etc.

American Seating Co., 14 E. Jackson Blvd., Chicago, Ill.

Ars Ecclesiastica Booklet. 8½ x 11 in. 48 pp. Illustrations of church fitments in carved wood.

Theatre Chairs. Booklet. 6 x 9 in. 48 pp. Illustrations of theatre chairs.



The Bamberger Ideal Home
Newark, N. J.

Francis Nelson, Architect
C. F. Karser, Plumbing Contractor

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One of America's great department stores—L. Bamberger & Company, Newark, N. J.—has just finished an "Ideal Home" for exhibition purposes. Infinite care and skill have guided decisions on every detail of construction and furnishing.

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In Canada: ANACONDA AMERICAN BRASS LIMITED, NEW TORONTO, ONTARIO

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 90*

FURNITURE—Continued

Hampton Shops, 18 East 50th St., New York, N. Y.
Glimpses from Hampton Exhibits. Brochure. 16 pp. 5 x 7½ in. Illustrated. Shows examples of Hampton work and gives one an idea of their resources. Of interest to the client as well as to the architect.

Kensington Mfg. Company, 14 East 32nd St., New York, N. Y.
Photographs and full description of hand-made furniture in all the period styles furnished promptly in response to a specific inquiry.
Illustrated booklet indicative of the scope, character and decorative quality of Kensington furniture mailed on request.

GLASS CONSTRUCTION

Mississippi Wire Glass, 220 Fifth Avenue, New York.
Mississippi Wire Glass. Catalog. 3⅞ x 8½ in. 32 pp. Illustrated. Covers the complete line.

Plate Glass Mfrs. of America. First National Bank Bldg., Pittsburg, Pa.
Plate Glass. Booklet. 5¾ x 9¼ in. 12 pp. Describes manufacture and use of plate glass, with sizes.

GRANITE—See Stone, Building

HARDWARE

The American Pulley Company, 4200 Wissahickon Ave., Philadelphia, Pa.
Sash Pulleys of Pressed Metal. Booklet. 7½ x 5½ in. 44 pp. Illustrated. Contains description of pressed metal sash pulley, with complete dimensions and style numbers for finishes and trade name.

Cutler Mail Chute Company, Rochester, N. Y.
Cutler Mail Chute Model F. Booklet. 4x 9¼ in. 8 pp. Illustrated.

McCabe Hanger Manufacturing Company, 425 West 25th St., New York, N. Y.
Elevator Door Hangers. Booklet. 6 x 9 in. 8 pp. Illustrated. Descriptive booklet showing different types of elevator door hangers. Full size details sent upon request.
Special Folding and Accordion Door Hangers. Booklet. 6 x 9 in. 8 pp. Illustrated. Booklet with complete description of various types of folding and accordion door hangers. Full size details upon request.

McKinney Mfg. Co., Pittsburgh, Pa.
McKinney Complete Garage Hardware Sets. Catalog. 6¼ x 10 in. 20 pp. Illustrated. Describes full line of complete garage hardware sets for all kinds of entrances, with views of typical entrances and sketches.
McKinney Hinges and Butts. General Catalog. 6¼ x 10 in. Illustrates and describes complete line of McKinney wrought builders' hardware products, including hinges, butts, door hangers and track, latches, garage hardware and specialties.

Richard-Wilcox Mfg. Co., Aurora, Ill.
Distinctive Garage Door Hardware. Booklet. 8½ x 11 inches. 65 pp. Illustrated. Complete information accompanied by data and illustrations on different kinds of garage door hardware.

Sargent & Company, New Haven, Conn.
Sargent Locks and Hardware, Architects' Edition. 9 x 12 in. 762 pages. Illustrated. The latest complete catalogue of Locks and Hardware.
Details to Which Standard Hardware Can Be Applied. Booklet 6 pp. 9 x 12 inches, illustrated. Treats with diagrams, portions of doors and windows to which hardware can be applied.

Vonnegut Hardware Co., Indianapolis, Ind.
Von Duprin Self-Releasing Fire Exit Devices. Catalog. 12F. 8 x 11 in. 41 pp. Illustrated.
"Saving Lives." Booklet. 3¼ x 6 in. 16 pp. Illustrated. A brief outline why Self-Releasing Fire Exit Devices should be used.

HEATING EQUIPMENT

American District Steam Company, North Tonawanda, N. Y.
Adsco Heating. Bulletin No. 138. 6¾ x 9¼ in. 16 pp. Illustrated. Describes Adsco System of Atmospheric Steam Heating, its principle and operation.
Catalog No. 21-AF. 6 x 9 in. 200 pp. Illustrated. Lists and describes the full line of equipment and devices manufactured for use on underground and interior steam mains, expansion joints, steam meters, condensation meters, traps, flange fittings, angle fittings, manhole curbs, alignment guides, etc.

Clarage Fan Company, Kalamazoo, Mich.
Catalog No. 52. 8½ x 11 in. 84 pp. Illustrated. Describes Clarage Kalamazoo Multiblade Fans and Heaters for use in schools, churches, hospitals and industrial plants. Engineering data, capacity tables and dimensions included.

James B. Clow & Sons, 534 S. Franklin Street, Chicago, Ill.
Gasteam. Catalog. 6 x 9 in. 16 pp. Illustrated. New radiator using gas for fuel.

Excelso Specialty Works, 119 Clinton St., Buffalo, N. Y.
Excelso Water Heater. Booklet. 12 pp. 3 x 6 in. Illustrated. Describing the new Excelso method of generating domestic hot water in connection with heating boilers. (Firepot Coil eliminated.)

The Fulton Company, Knoxville, Tenn.
Sylphon Temperature Regulators. Bulletin T-103. 8½ x 11 in. 16 pp. Complete data on Sylphon temperature regulators for air and liquids. Catalog 100, complete line Sylphon Heating Specialties.
Damper Regulators, Air and Vent Valves. Catalog No. 100. 3¼ x 6¼ in. Sylphon Damper Regulators for steam, hot water and vapor systems. Sylphon Air and Vent Valves.

Illinois Engineering Co., Racine Ave. at 21st St., Chicago, Ill.
Vapor Heat Bulletin 21. 8½ x 11 in. 32 pp. Illustrated. Contains new and original data on Vapor Heating. Rules for computing radiation, pipe sizes, radiator tappings. Steam table showing temperature of steam and vapor at various pressures, also description of Illinois Vapor Specialties.

Johnson Service Company, 149 Michigan St., Milwaukee, Wis.
Regulation of Temperature and Humidity. Booklet. 11¼ x 8½ in. 64 pp. Illustrated. Describes Johnson system of pneumatic, automatic regulation of temperature and humidity, and illustrates thermostats, valves, air compressors, dampers, and other parts.

HEATING EQUIPMENT—Continued

Johnson Electric Thermostats, Valves and Controllers. Booklet. 6½ x 3½ in. 24 pp. Illustrated. Excellent plates showing electric thermostats and controllers.

Kelsey Heating Company, James St., Syracuse, N. Y.
Booklet No. 5. 4 x 9 in. 32 pp. Illustrated. A dealers' booklet showing the Kelsey Warm Air Generator Method of warming and distributing air. Gives dimensions, heating capacities, weights, kind of coal recommended, and shows the mechanical and gravity system of heating homes, churches and schools.
Monroe Pipeless Booklet, 4½ x 8 in. 20 pp. Illustrated.
Monroe Tubular Heater. Booklet. 4½ x 8 in. 20 pp. Illustrated. General Booklet giving capacities, dimensions, weights, etc.
Syracuse Pipeless Booklet. 4½ x 8 in. 12 pp. Illustrated. General Booklet giving sizes and capacities.

Kewanee Boiler Co., Kewanee, Ill.
Kewanee on the Job. Catalog. 8½ x 11 in. 80 pp. Illustrated. Showing installations of Kewanee boilers, water heaters, radiators, etc.
Catalog No. 73. 6 x 9 in. 35 pp. Illustrated. Describes Kewanee steel power boilers with complete specifications.

Minneapolis Heat Regulator Co., Minneapolis, Minn.
The Heart of the Heating Plant. Catalog. 6 x 9 in. 20 pp. Illustrated. Describing the Minneapolis Heat Regulator, its construction, application and operation for the automatic control of temperature where coal, gas, fuel oil or street steam is used.
Use of MINNEAPOLIS HEAT REGULATOR in connection with central station heating. 3¼ x 6 in. 12 pages. Illustrated. Descriptive folder showing the application of single unit heat regulators to central station heating, for office buildings or homes, including installation diagram and records of saving.
Minneapolis Dual Control. 3¼ x 6 in. 12 pages. Illustrated. Dual automatic temperature control, both of room temperatures and boiler temperatures or pressures. A system that insures perfect heat regulation and fuel saving with hot water, steam, or vapor heating.

Page Boiler Company, The Wm. H., 141 West 36th Street, New York, N. Y.
Page Boilers. **"The Distinguished Service Line."** Catalog. 4½ x 7½ in. 120 pp. Illustrated. Descriptions with specifications of the "Volunteer" Round and "Monarch" Square Sectional Steam and Hot Water Boilers—the "Monarch" Up-Draft Smokeless and Down-Draft Smokeless Boilers—Push Nipple and Header Types—with method for apportioning size of boiler and radiation, and other valuable heating data.
"Volunteer" Round Boilers. Folder, 6¼ x 9½ in. Illustrated. Ratings and dimensions, and assemblage of the various series.
"Monarch" (Regular) Square Sectional Boilers. Push Nipples and Header Types. Folder. 8 x 11 in. Illustrated. Description, ratings and Header Types. Folder. 8 x 11 in. Illustrated. Description, ratings and dimension.
"Monarch" Up-Draft Smokeless and Down-Draft Smokeless Boilers. Push Nipple and Header Types. Folders. 8 x 11 in. Illustrated. Description of the features which adapt the "Monarch" Up-Draft Smokeless for the use of any available fuel, a vital factor in these times of shortage and substitution. Ratings and dimensions.

Utica Heater Company, Utica, N. Y.
Imperial Round and Square Boilers and Supplies. Catalog. 3½ x 6½ in. Gives complete data on small heaters.
Special Folders. 8½ x 11 in. "Warmth and Comfort," describing the scientifically correct NEW IDEA pipeless furnaces. "SUPERIOR Warm Air Pipe Furnaces," a standard line of heating equipment for over forty years. "SUPER-SMOKELESS Pipe and Pipeless Furnaces," a new and remarkably efficient warm air heater, burning cheap soft coal without smoke—utilizing the principle of the Bunsen Burner.
"Imperial Sectional Square Boilers," for hard coal heating of all types of buildings.
Utica Imperial SUPER-SMOKELESS Boiler. Catalog. 8½ x 11 in. Consists of the following seven bulletins, either loose or bound together: (1) School Heating Bulletin. (2) Public Building Bulletin. (3) Theatre Heating Bulletin. (4) Churches and Religious Institutions. (5) Residences, Apartments and Hotels. (6) Offices, Industrial Buildings and Garages. (7) Technical Bulletin describing patented Bunsen Burner design and construction of the SUPER-SMOKELESS BOILER, which burns the cheapest grades of soft coal smokelessly and operates equally well with hard coal, coke or fuel oil.

HEAT REGULATORS—See Heating Equipment

HOISTS—See Ash Hoists

HOLLOW TILE—See Tile, Hollow

HOSPITAL EQUIPMENT

The International Nickel Company, 67 Wall St., New York, N. Y.
Hospital Applications of Monel Metal. Booklet. 8½ x 11½ in. 16 pp. Illustrated. Gives types of equipment in which Monel Metal is used, reasons for its adoption, with sources of such equipment.

The Kny-Scheerer Corporation of America, 119 Seventh Ave., New York.
Hospital Equipment, 16th Edition. 7¾ x 10½ in. 232 pp. Illustrated. Complete description of Hospital and Surgical Furniture, Hospital Appliances including Operating Tables, Cabinets, Sterilizers for Water, Dressing and Instruments, also Hydrotherapeutic Apparatus.
Surgical Sundries. P/2 Edition. Booklet. 7¾ x 10½ in. 48 pp. Illustrated. A complete line of glassware, enamelware, rubber goods, restraint apparatus, instrument sterilizers, sputum cups, wheel chairs and sick room comforts.
Electro-Medical. 25th Edition. Booklet. 7¼ x 10½ in. 160 pp. Illustrated. A complete line of Albee Bone Sets, Apparatus for AC and DC, Cystocopes, Heat Magnets, Vibrators, Compressors, Electric Light Baths, High Frequency Apparatus and X-Ray Apparatus and Accessories.

PAGE BOILERS

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Burns all grades
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CLEVELAND, Rose Building

FACTORY: MEADVILLE, PA.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 92*

INCINERATORS

The Kerner Incinerator Company, 1029 Chestnut St., Milwaukee, Wis.
The Kernerator. Booklet. 5½ x 9¾ in. 40 pp. Illustrated. Describes principle and design of the Kernerator, guarantee and service, also gives illustrations of buildings where it has been installed and testimonials.
Sanitary Elimination of Household Waste. Booklet. 4 x 9 in. 16 pp. Illustrated. Shows process, installations and advantages of the Kernerator.
Sanitary Disposal of Waste in Hospitals. Booklet. 4 x 9 in. 12 pp. Illustrated. Shows how this necessary part of hospital service can be taken care of by the Kernerator.

INSULATION

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.
Specifications and Working Details. Booklet. 7¾ x 10½ in. Illustrated. Contains plainly written instructions for the use of stucco, stucco base, plaster base and insulation base.

Philip Carey Co., The, Cincinnati, Ohio.
Carey Asbestos and Magnesia Products. Catalog. 6 x 9 in. 72 pp. Illustrated.

Johns-Manville, Inc., Madison Ave., and 41st St., New York, N. Y.
Johns-Manville Service to Power Users. Catalog. 8½ x 11 in. 150 pp. Illustrated. Contains valuable data on all forms of insulations, packings, steam traps, high temperature cements, brake locks and linings, also general technical data.

United States Mineral Wool Co., 280 Madison Ave., New York.
The Uses of Mineral Wool in Architecture. Booklet. 5¼ x 6¾ in. 24 pp. Illustrated. Describes properties of mineral wool as insulation against heat, frost, sound. Specifications and section drawing for use as a fireproofing. Rule for estimate and cost.

KITCHEN EQUIPMENT

Colt's Patent Fire Arms Mfg. Company, Hartford, Conn.
AUTOSAN Dish and Silver Cleaning Machines. Booklets. 6 x 9 in. Describing rotary table type and conveyor type machines.

Wm. M. Crane Company, 16-20 West 32nd St., New York, N. Y.
VULCAN Gas Ranges and Appliances. Booklet. 5 x 8 in. 50 pp. Illustrated. Describes complete line, including VULCAN SMOOTH TOP Compact Cabinet Gas Ranges for kitchens in the home.
VULCAN Gas Equipment for Hotels, Hospitals, Restaurants, etc. Booklet. 5 x 8 in. 45 pp. Illustrated. Equipment for heavy-duty cooking requirements, with information of value to architects in planning kitchens.

The International Nickel Company, 67 Wall St., New York, N. Y.
Hotels, Restaurants and Cafeteria Applications of Monel Metal. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives types of equipment in which Monel Metal is used, with service data and sources of equipment.

Pick & Company, Albert, 208 W. Randolph St., Chicago, Ill.
School Cafeterias. Portfolio. 17 x 11 in. 44 pp. Illustrated. An exhaustive study of the problems of school feeding, with copious illustrations and blue prints. Very valuable to the architect.
Hotel, Apartment Building, Club and, Institution Installations. Portfolio. 17 x 11 in. 100 pp. Shows, mostly by plates, how the Albert Pick Company equips hotels completely from top to bottom.
Equipment for Cafeterias, Lunch Rooms, Restaurants, and Dining Rooms Portfolio. 17 x 11 in. 86 pp. Illustrated. The last word in Cafeteria equipment to meet all requirements.

LATH, METAL AND REINFORCING

The General Fireproofing Company, Youngstown, Ohio.
Herringbone Metal Lath Handbook. 8½ x 11 in. 32 pp. Illustrated. Standard specifications for Cement Stucco on Herringbone Rigid Metal Lath and interior plastering.

National Steel Fabric Company, Pittsburgh, Pa.
Folder. 8½ x 11 in. 6 pp. Illustrated. Describes National Stucco-Plaster Reinforcement, a base for exterior stucco and interior plastering, composition flooring, etc., with photographs and drawings.

North Western Expanded Metal Co., 1234 Old Colony Building, Chicago, Ill.
Designing Data. Catalog. 6 x 9 in. 94 pp. Illustrated. Describes most efficient use of Econo Expanded Metal Reinforcing. Formless Concrete Construction. Catalog. 6 x 9 in. 80 pp. Illustrated. Describes use of T-Rib Chanelath, a form and reinforcing for concrete.

LAUNDRY CHUTES

The Pfaudler Company, 217 Cutler Building, Rochester, N. Y.
Pfaudler Glass-Lined Steel Laundry Chutes. Booklet. 5⅛ x 7¾ in. 16 pp. Illustrated. A beautifully printed brochure describing in detail with architects' specifications THE PFAUDLER GLASS LINED STEEL LAUNDRY CHUTES. Contains views of installations and list of representative ones.

LAVATORY ACCESSORIES

Cortes Ward Company, Inc., 245 West 55th St., New York, N. Y.
Literature to show how an appreciation service may be rendered to employees or patrons through the use of Lily Pads and Lily Vending Machines.

LEADERS AND GUTTERS

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.
Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

United Alloy Steel Corporation, Canton, Ohio.
Better Sheet Metal, 8½ x 11 in. 128 pages and cover. Illustrated. Shows the many uses of Toncan Metal with many pictures of buildings, names of architects, etc., also tables of weights and other useful specification data.

MAIL CHUTES

Cutler Mail Chute Company, Rochester, N. Y.
Cutler Mail Chute Model F. Booklet. 4 x 9¼ in. 8 pp. Illustrated.

MANTELS

Arthur Todhunter, 414 Madison Ave., New York, N. Y.
Mantels and Fireplace Equipment. Booklet. 8½ x 11 in. Illustrated. Separate sheet plates showing mantels installed and furnished, also andirons and grates grouped with suitable pieces, also lanterns, weather-vanes and hand-wrought hardware. All sizes and descriptions given on each plate.

MARBLE

The Georgia Marble Company, Tate, Ga. New York Office, 1328 Broadway.
Why Georgia Marble is Better. Booklet. 3⅛ x 6 in. Gives analysis, physical qualities, comparison of absorption with granites, opinions of authorities, etc.
Convincing Proof. Booklet. 3⅛ x 6 in. 8 pp. Classified list of buildings and memorials in which Georgia Marble has been used, with names of Architects and Sculptors.

Tompkins-Kiel Marble Company, 505 Fifth Ave., New York, N. Y.
Reproductions in natural colors of imported and domestic marbles and stone for interior and exterior uses.
Bulletins. 9¾ x 12¾ in. illustrating buildings of various types in which Tompkins-Kiel Marble Company's imported and domestic marbles and stone have been used.

METAL LATH—See Lath, Metal and Reinforcing

METALS

American Sheet & Tin Plate Co., Frick Building, Pittsburgh, Pa.
Reference Book. Pocket Ed. 2½ x 4½ in. 168 pp. Illustrated. Covers the complete line of Sheet and Tin Mill Products.
Apollo and Apollo-Keystone Galvanized Sheets. Catalog. 8½ x 11 in. 20 pp. Illustrated.
Research on the Corrosion Resistance of Copper Steel. Booklet. 8½ x 11 in. 24 pp. Illustrated. Technical information on results of atmospheric corrosion tests of various sheets under actual weather conditions.
Facts Simply and Briefly Told. Booklet. 8½ x 11 in. 16 pp. Illustrated. Non-technical statements relating to Keystone Copper Steel.
Black Sheets and Special Sheets. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes standard grades of Black and Uncoated Sheets, together with weights, bundling tables, etc.
Bright Tin Plates. Catalog. 8½ x 11 in. 16 pp.

Bridgeport Brass Company, Bridgeport, Conn.
Seven Centuries of Brass Making. Booklet. 10½ x 8 in. 78 pp. Illustrated in color. A brief history of the ancient art of Brass Making and its early (and even recent) method of production—contrasted with that of the Electric Furnace Process—a twentieth century achievement of the Bridgeport Brass Company.
Tested High-Speed Brass Rod. Booklet 10½ x 8 in. 16 pp. Illustrated. Short treatise on the manufacture of Brass Rod for use in Screw Machines, with particular reference to improvements originated by the Bridgeport Brass Company.

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.
Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

The International Nickel Company, 67 Wall St., New York, N. Y.
The Choice of a Metal. Booklet. 6¼ x 3¼ in. 16 pp. Illustrated. Monel Metal—its qualities, use and commercial forms, briefly described.

United Alloy Steel Corporation, Canton, Ohio.
Sheet Metal Primer. 5¼ x 7¾ in. 32 pages and cover. Illustrated. A non-technical description of the making of iron and steel from ore to sheet metal and a brief discussion of modern developments in this field.
Metallurgy of Modern Commercial Iron Sheets. Booklet. 3¾ x 6¼ in. 16 pages. An interesting discussion of the methods used in producing metal sheets.

METAL TRIM—See Doors and Trim, Metal

MILLWORK—See also Wood

Curtis Companies Service Bureau, Clinton, Iowa.
Architectural Interior and Exterior Woodwork, Standardized. Book. 9 x 11½ in. 240 pp. Illustrated. This is an Architects' Edition of the complete catalog of Curtis Woodwork, as designed by Trowbridge & Ackerman. Contains many color plates.
Better Built Homes, Vols. XV-XVIII incl. Booklet. 9 x 12 in. 40 pp. Illustrated. Designs for houses of five to eight rooms, respectively, in several authentic types, by Trowbridge & Ackerman, architects for the Curtis Companies.
Curtis Details. Booklet. 19½ x 23½ in. 20 pp. Illustrated. Complete details of all items of Curtis woodwork, for the use of architects.

MORTAR COLORS

Clinton Metallic Paint Co., Clinton, N. Y.
Clinton Mortar Colors. Folder. 8½ x 11 in. 4 pages. Illustrated in color, gives full information concerning Clinton Mortar Colors with specific instructions for using them.
Color Card. 6½ x 3¼ in. Illustrates in color the ten shades of which Clinton Mortar Colors are manufactured.

OFFICE SUPPLIES

Chas. M. Higgins & Co., 271 Ninth Street, Brooklyn, N. Y.
Descriptive Catalog. 3½ x 5½ in. 27 pages. Illustrated. Contains description, and prices of Higgins Inks and Adhesives. Color Card illustrating various colors of the drawing inks supplied separate, size 3½ x 6¼.

ORGANS

Estey Organ Company, Brattleboro, Vt.
Pipe Organs. Complete specifications and full information furnished to the architect for pipe organ to be installed in any given residence upon receipt of plans and other particulars.

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See Sweet's for Specifications

HOCKADAY

THE WASHABLE PAINT FOR ALL INTERIORS

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 94*

PAINTS, STAINS, VARNISHES AND WOOD FINISHES

Acme White Lead & Color Works, Detroit, Mich.
Booklet. 9 x 12 inches, 44 pp. Specifications for paint, enamel, varnish and dampproofing material.

Boston Varnish Co., Everett Station, Boston 49, Mass.
The Inviting Home. Booklet. 5½ x 8 in. 16 pp. Illustrations in colors of attractive interiors.
Set of Twelve Measured Drawings. 8½ x 11 in.
Kyanize—Its Important Place in Recent Eastern Architecture. Booklet. 6 x 9 in. 16 pp. Varnish and Enamel Specifications.

Cabot, Inc., Samuel, Boston, Mass.
Cabot's Creosote Stains, Booklet. 4 x 8½ in. 16 pp. Illustrated.

The Glidden Company, Cleveland, Ohio.
"More Daylight." 8 x 10½ in. 20 pp. Portraying by illustrations and text the need and methods of modern mill painting.

The Hockaday Company, 1823 Carroll Ave., Chicago, Ill.
Paint Mileage. Book. 8 x 10½ in. 56 pp. Illustrated. A reference book on interior painting. Describes use of paint over all sorts of surfaces, with illustrations of buildings where Hockaday has been specified. Hockaday service explained.
Solving Your Paint Problems. Booklet. 8½ x 11 in. 44 pp. Illustrated. Describes use of Hockaday Paint in Industrial Buildings, particularly in textile mills. Details of Hockaday service and specifications.

Martin Varnish Co., 2500 Quarry St., Chicago, Ill.
Architectural Specifications. Booklet. 8½ x 11 in. 20 pp. Illustrated. Complete guide for Architects in specifying Martin Varnish Products.
Your Floors. Booklet. 5 x 7 in. 20 pp. Illustrated. Explains fully how to finish all kinds of floors and woodwork with Martin's Pure Varnish.

Murphy Varnish Company, 234 McWhorter St., Newark, N. J.
The Book of Decoration. Booklet. 46 pp. 8½ x 11 in. Illustrated. Written and illustrated by masters of the art. Old and modern interiors by famous Architects. Characteristic paneling, ceilings, floors, hangings and furnishings of each period are illustrated and charted. Price 50 cents.
Eight Periods and Their Modern Adaptation. Furnished to Architects and Builders. In this volume the historic architectural periods are illustrated with authentic photographs of famous interiors. Each period is charted to show correct treatment for different rooms. Complete architectural specifications included.
Univernish, the Universal Varnish. Booklet. 3¼ x 6 in. 8 pp. Describes the uses, working and economy of Univernish.
Muronic Enamel. Descriptive leaflet and price-list. 4 pp. 4 x 6 in.

National Lead Company, 111 Broadway, New York, N. Y.
Handy Book on Painting. Book. 5½ x 3¼ in. 100 pp. Gives directions and formulas for painting various surfaces of wood, plaster, metal, etc., both interior and exterior.
Red Lead in Paste Form. Booklet. 6¼ x 3½ in. 16 pp. Illustrated. Directions and formulas for painting metals.
Came Lead. Booklet. 8¼ x 6 in. 12 pp. Illustrated. Describes various styles of lead cames.
Cinch Anchoring Specialties. Booklet. 6 x 3½ in. 20 pp. Illustrated. Describes complete line of expansion bolts.

The Ripolin Company, Cleveland, Ohio.
Ripolin Specifications. Book. 8 x 10¼ in. 12 pp. Complete specifications and general instructions for the application of Ripolin, the original Holland enamel paint. Also directions for proper finishing of wood, metal, plaster, concrete, brick and other surfaces.
"Why Ripolin Has an International Reputation." 8 x 10¼ in. 24 pp. Designed for the architect's files to illustrate the many varied uses of Ripolin Enamel Paint in all parts of the world. Profusely illustrated.

Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.
Preservative Coatings. Booklet. 6 x 9 in. 15 pp. Illustrated. Presents in a concise manner the properties and uses of the Ruberoid Company's various paint preparations.

Sherwin-Williams Company, 601 Canal Rd., Cleveland, Ohio.
Painting Concrete and Stucco Surfaces. Bulletin No. 1. 8½ x 11 in. 8 pp. Illustrated. A complete treatise with complete specifications on the subject of Painting of Concrete and Stucco Surfaces. Color chips of paint shown in bulletin.
Enamel Finish for Interior and Exterior Surfaces. Bulletin No. 2. 8½ x 11 in. 12 pp. Illustrated. Thorough discussion including complete specifications for securing the most satisfactory enamel finish on interior and exterior walls and trim.
Painting and Decorating of Interior Walls. Bulletin No. 3. 8½ x 11 in. 20 pp. Illustrated. A wonderful reference book on Flat Wall Finish including texture effects which are taking the country by storm. Every architect should have one on file.
Protective Paints for Metal Surfaces. Bulletin No. 4. 8½ x 11 in. 12 pp. Illustrated. A highly technical subject treated in a simple, understandable manner.

Smith & Co., Edward, P. O. Box 76, City Hall Station, New York, N. Y.
Architect's Handoook. 3¼ x 7½ in. 24 pp. Specifications and suggestions for painting, varnishing, enameling, etc.

Sonneborn Sons, Inc., L., Dept. 4, 116 Fifth Avenue, New York.
Paint Specifications. Booklet. 8½ x 10¼ in. 4 pp.

PANELING—See Millwork

PARTITIONS

Improved Office Partition Company, 25 Grand St., Elmhurst, L. I.
Telesco Partition, Catalog. 8¼ x 11 in. 14 pp. Illustrated. Shows typical offices laid out with Telesco partitions, cuts of finished partition units in various woods. Gives specifications and cuts of buildings using Telesco.
Detailed Instructions for erecting Telesco Partitions. Booklet. 24 pp. 8½ x 11 in. Illustrated. Complete instructions, with cuts and drawings, showing how easily Telesco Partition can be erected.

PARTITIONS—Continued

Richards-Wilcox Mfg. Co., Aurora, Ill.
Partitions. Booklet. 7 x 10 in. 32 pp. Illustrated. Describes complete line of track and hangers for all styles of sliding, parallel, accordion and flush door partitions.

The J. G. Wilson Corporation, 11 East 36th St., New York, N. Y.
Rolling Partitions, Hygienic and Disappearing Door Wardrobes. Booklet. 6 x 9 in. 32 pp. Illustrated. Describes rolling partitions, particularly in churches and schools, and wardrobes as installed in schools and public institutions.

PIPE

American Brass Company, Waterbury, Conn.
Bulletin B-1, "Brass Pipe for Water Service." 8½ x 11 in. 28 pp. Illustrated. Gives schedule of weights and sizes (I.P.S.) of seamless brass and copper pipe, shows typical installations of brass pipe, and gives general discussion of the corrosive effect of water on iron, steel and brass pipe.

Bridgeport Brass Company, Bridgeport, Conn.
Bulletin No. 15. Brass Pipe and Piping. Booklet. 8 x 10½ in. 48 pp. Illustrated. When and how to use Brass Pipe. Brass pipe compared with iron and steel pipe for hot water service. Corrosion. Description of manufacture of Bridgeport Plumrite Brass Pipe.

A. M. Byers Company, 235 Water St., Pittsburgh, Pa.
Bulletin 26-A. "What is Wrought Iron?" 8 x 10¾ in. 40 pp. Illustrated. Descriptions of materials and processes employed in manufacturing Byers genuine wrought iron pipe. Factors influencing corrosion. Gives table of pipe sizes, weights, dimensions, tests, etc., and tabulated records of the life of iron and steel pipe in various kinds of service.
Bulletin 30. An Investigation of Pipe Corrosion in Hot Water Service. 8 x 10¾ in. 20 pp. Illustrated. Shows service records of iron, steel and brass pipe used for hot and cold water supply lines in 129 Pittsburgh Apartment Buildings.
Bulletin 32. Corrosion of Wright Iron, Cast Iron and Steel Pipe in House Drainage Systems. 8 x 10¾ in. 32 pp. Illustrated. Data obtained through investigations conducted in New York and Chicago by Dr. Wm. P. Gerhardt, C. E., and Thomas J. Claffy, Asst. Chief San. Inspector city of Chicago.
Bulletin 38. The installation Cost of Pipe. 32 pp. 8 x 10¾ in. Illustrated. Cost analysis of 20 different pipe installations, in power and industrial plants, office buildings, hotels, residences, etc.

Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.
Catalog "A," 4 x 6½ in. 700 pp. Illustrated. Shows a full line of steam, gas and water works supplies.

National Tube Co., Frick Building, Pittsburgh, Pa.
"National" Bulletin No. 2. Corrosion of Hot Water Pipe. (8½ x 11 in. 24 pp.) Illustrated. In this bulletin is summed up the most important research dealing with hot water systems. The text matter consists of seven investigations by authorities on this subject.
"National" Bulletin No. 3. The Protection of Pipe Against Internal Corrosion (8½ x 11 in. 20 pp.) Illustrated. Discusses various causes of corrosion and details are given of the deactivating and deaerating systems for eliminating or retarding corrosion in hot water supply lines.
"National" Bulletin No. 25. "National" Pipe in Large Buildings. 8½ x 11 in. 88 pp. This bulletin contains 254 illustrations of prominent buildings of all types, containing "National" Pipe and considerable engineering data of value to architects, engineers, etc.
Modern Welded Pipe. Book of 88 pages (8½ x 11 in.), profusely illustrated with halftone and line engravings of the important operations in the manufacture of pipe.

Reading Iron Company, Reading, Pa.
Reading Genuine Wrought Iron Pipe in the Making and in Service. Bulletin No. 1. 8½ x 11 in. 32 pp. Illustrated. History of the Reading Iron Company. Origin of wrought iron—description of each process of manufacture of both buttweld and lapweld pipe—Reading Pipe in various fields.
Book of Standards. Booklet. 5 x 7 in. 48 pp. Illustrated. Complete tables showing dimensions, tests and list prices on each of the 552 different kinds of Reading Tubular goods. Two simple tests for distinguishing genuine wrought iron pipe.
The Painted Molecule. Booklet. 4 x 9 in. 8 pp. Illustrated. A brief, non-technical description of the reasons for the longer life of Reading Iron Pipe, with instances of actual service.
The Ultimate Cost, Booklet. 5¼ x 7¼ in. 24 pp. Illustrated in two colors. A comparison in actual figures of the initial cost and the ultimate cost of plumbing and heating systems in several kinds of homes.

PLUMBING EQUIPMENT

American Brass Company, Waterbury, Conn.
Benedict Nickel. Illustrated pamphlet descriptive of Benedict Nickel White Metal for high-grade plumbing fixtures.

Bridgeport Brass Company, Bridgeport, Conn.
Plumbing Supplies. Booklet. 10½ x 8 in. 20 pp. Illustrated. Describes a few of the different plumbing supplies manufactured by the Bridgeport Brass Company.

Brunswick-Balke-Collender Co., 623 S. Wabash Avenue, Chicago, Ill.
Whale-bone-ite Seat. Booklet. 3½ x 6¼ in. 4 pp. Illustrated.
Whale-bone-ite Seat. Booklet. 3½ x 6¼ in. 8 pp. Illustrated.

Clow & Sons, James B., 534 S. Franklin Street, Chicago, Ill.
Catalog "M." 9¼ x 12 in. 184 pp. Illustrated. Shows complete line of plumbing fixtures for Schools, Railroads and Industrial Plants.

Crane Company, 836 S. Michigan Avenue, Chicago, Ill.
Crane Products in World Wide Use. Catalog. 5 x 9½ in. 24 pp. Illustrated.
Plumbing Suggestions for Home Builders. Catalog. 3 x 6 in. 80 pp. Illustrated.
Plumbing Suggestions for Industrial Plants. Catalog. 4 x 6½ in. 43 pp. Illustrated.

"WHEN IT'S UP, IT'S ON"—

The next time you have occasion to take people through a recently completed house, or apartment, notice the interest with which they examine the electrical details.

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No. 7023—Three Gang Plate
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New York Chicago San Francisco

CONNECTICUT "A-1" DEVICES

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 96*

PLUMBING EQUIPMENT—Continued

Douglas Co., The John, Cincinnati, Ohio.
Catalog "C." 10½ x 8 in. 200 pages illustrated. Illustrates and describes the Douglas complete line of China Sanitary plumbing fixture.
Booklet. "Douglas suggests for your home." 6 x 3½ in. 39 pp. Illustrated.

Eljer Company, 15 E. Van Buren St., Chicago, Ill.
The Standardized Sixteen. Booklet. 3¾ x 6¾ in. 16 pp. Illustrated. Describes fully the complete Eljer line of standardized plumbing equipment, with diagrams, weights, measurements and copious illustrations.
Standardized Sixteen. Circular. 3¾ x 6¾ in. 18 pp. Illustrated.
Complete catalog. 3¾ x 6¾ in. 104 pp. Illustrated.

Kohler Co., Kohler, Wis.
Catalog F. 7½ x 10¾ in. 216 pp. Illustrates and describes the complete line of Kohler trade-marked plumbing ware.
Roughing-In Measurement Binder. 5 x 8 in., containing loose leaf sheets on all staple fixtures.

Maddock's Sons Co., Thomas, Trenton, N. J.
Highest Grade Standardized Plumbing Fixtures for Every Need. Catalog. 5 x 7½ in. 94 pp. Illustrated. Covers the complete line.
Bathroom Individuality. Booklet. 6 x 9 in. 28 pp. Illustrated. Showing view of complete bathrooms with complete descriptions of floor plans.
Specifications for Plumbing Fixtures. Booklet. 9 x 12 in. 8 pp. Tables of specifications for industrial buildings, schools, apartments, hotels, etc.

Speakman Company, Wilmington, Del.
Speakman Showers and Fixtures. Catalog. 4½ x 7½ in. 250 pp. Illustrated. Catalog of Modern Showers and Brass Plumbing Fixtures, with drawings showing layouts, measurements, etc.
Toned Up in Ten Minutes. Booklet. 7½ x 10½ in. 16 pp. Illustrated. Modern Showers and Washups for Industrial Plants, showing the sanitary method of washing in running water.

Wolff Manufacturing Company, 255 No. Hoyne Ave., Chicago, Ill.
Plumbing Suggestions. Catalog. 3¼ x 6 in. 50 pp. Illustrated. Illustrating, describing and pricing Wolff Quality Plumbing Fixtures for residential installation.

PUMPS

Goulds Mfg. Co., The, Seneca Falls, N. Y.
Set of Twenty Bulletins, 7½ x 10¾ in. 12 to 32 pp. each. Illustrated. Covers complete line of power and centrifugal pumps for all services.

Kewanee Private Utilities Co. 442 Franklin St., Kewanee, Ill.
Bulletin E. 7¾ x 10¼ in. 32 pp. Illustrated. Catalog. Complete descriptions, with all necessary data, on Standard Service Pumps, Indian Brand Pneumatic Tanks, and Complete Water Systems, as installed by Kewanee Private Utilities Co.

RAMPS

Ramp Buildings Corporation, 115 Broad St., New York, N. Y.
The d'Humy Motoramp System of Building Design. Booklet. 8½ x 11 in. 20 pp. Illustrated. Describes the d'Humy system of ramp construction for garages, service buildings, factories, warehouses, etc., where it is desirable to drive motor vehicles or industrial tractors under their own power from floor to floor.
Storage Efficiency of Multi-Floor Garages. Leaflet. 8½ x 11 in. 4 pp. Illustrated. A brief discussion of comparative storage efficiencies of elevator garages, ordinary ramp garages, and d'Humy Motoramp garages.
Visibility. Pamphlet. 8½ x 11 in. 2 pp. Illustrated. Discussion of visibility feature of d'Humy Motoramp System with reference to illustration of one particular installation.
Series of Informal Bulletins on Garage Design. Sent upon request.

REINFORCED CONCRETE—See also Construction, Concrete

The General Fireproofing Company, Youngstown, Ohio.
Self-Sentering Handbook. 8½ x 11 in. 36 pp. Illustrated. Methods and specifications on reinforced concrete floors, roofs and floors with a combined form and reinforced material.

Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.
Shearing Stresses in Reinforced Concrete Beams. Booklet. 8½ x 11 in. 12 pp

ROOFING

American Brass Company, Waterbury, Conn.
Service Sheets 43-1 and 43-2, standard specifications and methods of laying copper roofings, flashings, hips, valleys, decks, gutters and leaders.

American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
Better Buildings. Catalog. 8½ x 11 in. 32 pp. Describes Corrugated and Formed Sheet Steel Roofing and Siding Products, black, painted and galvanized, with directions for application of various patterns of Sheet Steel Roofing in various types of construction.
Copper—Its Effect Upon Steel for Roofing Tin. Catalog. 8½ x 11 in. 28 pp. Illustrated. Describes the merits of high grade roofing tin plates and the advantages of the copper-steel alloy.
"The Testimony of a Decade." Booklet. 8½ x 11 in. 16 pp., with Graphic Chart and illustration showing losses to various Iron and Steel Sheets for roofing, from atmospheric corrosion.

Philip Carey Co., Lockland, Cincinnati, Ohio.
Architects' Specifications for Carey Built-up Roofing. Booklet. 8 x 10¾ in. 24 pp. Illustrated. Complete data to aid in specifying the different types of built-up roofing to suit the kind of roof construction to be covered.
Carey Built-up Roofing for Modern School Buildings. Booklet. 8 x 10¾ in. 32 pp. Illustrated. A study of school buildings of a number of different kinds and the roofing materials adapted for each.

ROOFING—Continued

Copper & Brass Research Assn., 25 Broadway, New York, N. Y.
Copper Roofing. Booklet. 8½ x 11 in. 32 pp. Illustrated. Gives information regarding weights of various roofing materials. Describes up-to-date practice and methods of laying copper roofs; decorative effects and how to obtain them. Gives specifications and details. Flashings, reglets, gutters and leaders, cornices and copper-covered walls.

Creo-Dipt Company, 1025 Oliver St., North Tonawanda, N. Y.
Architectural Service Sheets. 8½ x 11 in. Illustrated. Working drawings of construction, with standard specifications for design and construction of same.

Federal Cement Tile Co., 110 So. Dearborn St., Chicago, Ill.
The Indestructible Roof. Booklet. 10 x 13 in. 32 pp. Illustrated. Illustrates and describes the installation of permanent concrete interlocking tile, tile with glass insets, flat tile and channel tile, on all types of industrial plants and other buildings with flat and pitched surfaces.
Standards. Booklet. 8½ x 11 in. 40 pp. Illustrated with full-page drawings. Gives full details of all forms of roof construction, of steel structure, ridge and gutter construction, purlin arrangement, spacing, etc., for standard roofs.

B. Mifflin Hood Brick Co., Atlanta, Ga.
Roof Tile—"Riviera" Mission and Shingle. Folder. 8½ x 11 in. 4 pp. Illustrated. Shows application of this tile, with suggested specifications and installation instructions. Free to architects and engineers.

Illinois Zinc Company, 332 S. Michigan Ave., Chicago, Ill.
Corrugated Sheets of Pure Rolled Zinc. Booklet. 3½ x 8½ in. 8 pp. Illustrated. Facts regarding adaptability of zinc for roofing. Specifications of Corrugated Zinc Sheets. Weights per square. Comparative gauge lists. Table of safe loads.
The Roof That's Always New. Booklet. 3½ x 6 in. 12 pp. Illustrated. Story of Illinois Zinc Shingles, their everlasting and artistic qualities. Information regarding a complete zinc roof, shingles, starting piece valley, ridge and hip piece.
"How to Lay Illinois Zinc Shingles." Leaflet. 8½ x 11 in. 4 pp. Illustrated. Instructions for making a roof of Illinois Zinc Shingles using zinc clad nails, zinc starting piece, hip, zinc valleys, zinc ridge and hip pieces.

Johns-Manville, Inc., Madison Ave. & 41st St., New York, N. Y.
Johns-Manville Building Materials. Book. 8½ x 11 in. 100 pp. Illustrated. A comprehensive catalog of various types of roofing for all forms of construction. Details of wall, floor and ceiling insulation; asbestos wood for fireproof construction; waterproofing, etc.
Johns-Manville Asbestos Shingles. Booklet. 8½ x 11 in. 24 pp. Illustrated. This booklet is profusely illustrated in colors, showing some very artistic blends of asbestos shingles with various types of architecture. Contains many valuable suggestions for the architect.

Ludowici-Celadon Company, 104 So. Michigan Ave., Chicago, Ill.
"Ancient" Tapered Mission Tiles. Leaflet. 8½ x 11 in. 4 pp. Illustrated. For architects who desire something out of the ordinary, this leaflet has been prepared. Describes briefly our "Ancient" Tapered Mission Tiles, hand-made, with full corners and designed to be applied with irregular exposures.

Ruberoid Co., The (formerly the Standard Paint Co.), 95 Madison Avenue, New York, N. Y.
Instructions for Laying Built-up Roofs. Booklet. 8½ x 11. in. Illustrated.
Rubberoid Strip-Shingle. Booklet. 3½ x 6¼ in. 16 pp. Illustrated in color.

United Alloy Steel Corporation, Canton, Ohio
Better Sheet Metal. 8½ x 11 in. 128 pages and cover. Illustrated. Shows the many uses of Toncan Metal with many pictures of buildings, names of architects, etc., also tables of weights and other useful specification data.

ROOFING MATERIALS

National Slate Association, 757 Drexel Bldg., Philadelphia, Pa.
"Slate; Consider its Uses." Booklet. 4 x 6½ in. 20 pages and cover. Illustrated. A review of the advantages of using slate for various purposes, chiefly for roofing where it renders invaluable service by reason of its indestructibility.

SAFETY TREADS

American Abrasive Metals Co., 50 Church St., New York, N. Y.
Bronzalum Anti-Slip Treads. Date sheet 8½ x 11 inches, illustrated. Explains the use of Bronzalum treads for door saddles, stair treads, etc. Carborundum Anti-Slip Tile Treads. Data sheet 8½ x 11 inches, illustrated. Explains and illustrates the use of Carborundum Tile for stairs, ramps, floors, etc.

Universal Safety Tread Co., 40 Court St., Boston, Mass.
The Universal Safety Metal Tread. Booklet. 8½ x 11 in. 16 pp. Illustrated. Describes Safety Treads, with lead inserts in steel base, suitable for use on iron, wood or concrete stairs. Also the flat type, with "Alundum" surface, as well as special ladder treads for ships, power-house and engine-room open string stairways.

SASH CHAIN

American Chain Company, Inc., Bridgeport, Conn.
American Sash Chain. Booklet. 3½ x 6 in. 8 pp. Illustrated. Describes and illustrates American Sash Chain and Sash Fixtures.

Smith & Egge Mfg. Co., The, Bridgeport, Conn.
Chain Catalog. 6 x 8½ in. 24 pp. Illustrated. Covers complete line of chains, hardware and specialties.

SASH CORD

Samson Cordage Works, Boston, Mass.
Catalog. 3½ x 6¼ in. 24 pp. Illustrated. Covers complete line of rope and cord.

Yale University
New Haven, Conn.

Lord & Taylor Department Store
New York City

Emergency Hospital
General Electric Company
Schenectady, N. Y.

Hotel Pennsylvania
New York City

Mt. Sinai Hospital
New York City

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- Laboratory Equipment
- Operating Room Equipment
- Sanatorium Equipment
- Scientific Apparatus
- Sick Room Conveniences
- Sterilizers
  - —Bed Pan
  - Dressing
  - Instrument
  - Utensil
  - Water
- X-Ray Apparatus and Equipment

SINCE the business economy of the prompt treatment of injuries and illness has become generally recognized, architects are more often called upon to include emergency hospital facilities in their plans for industrial and public buildings.

The permanent equipment going into rooms of this sort requires special wiring and piping connections and many times special room arrangement.

The Kny-Scheerer Corporation now offers to architects through its Engineering Service Department consultation service on the arrangement, setting and installation of permanent hospital equipment.

Those who have in process of preparation plans for standard hospitals, department stores, schools, theatres, manufacturing plants or buildings of like nature are cordially invited to avail themselves of this service for which there is no charge

The KNY-SCHEERER Corp
OF AMERICA

119 Seventh Avenue New York, N.Y.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 98*

SCREENS

Athey Company, 6015 West 65th St., Chicago, Ill.
The Athey Perennial Window Shade. An accordian plaited window shade, made from translucent Herring bone woven Coutil cloth, which raises from the bottom and lowers from the top. It eliminates awnings, affords ventilation, can be dry cleaned and will wear indefinitely.

The Higgin Manufacturing Co., Newport, Ky.
Your Home Screened the Higgin Way. Booklet. 8½ x 11¼ in. 13 pp. Illustrated in colors. Complete description of Higgin Screens, designed to meet every need.

SEWAGE DISPOSAL

Kewanee Private Utilities, 442 Franklin St., Kewanee, Ill.
Specification Sheets, 7¾ x 10¾ in. 40 pp. Illustrated. Detailed drawings and specifications covering water supply and sewage disposal systems.

SHEATHING

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.
For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

SLATE

National Slate Association, 757 Drexel Bldg., Philadelphia, Pa.
Consider Its Uses. Booklet. 4 x 6¼ in. 20 pp. and cover. Illustrated. Detailed uses of slate profusely illustrated, covering roofing, structural, electrical, sanitary, flooring and other utilization of slate. Printed in two colors.

STAINS—See Paints, Varnishes, Wood Finishes

STEEL COMPARTMENTS

Henry Weis Mfg. Co., Atchison, Kan.
Catalog No. 11, 1923 Edition. 8½ x 11 in. 32 pp. Illustrated. Shows Toilet, Shower and Dressing room compartment, and Hospital Cubical installations in all types of buildings; describes "WEISTEEL" compartments in detail; gives complete specifications and suggested specifications for architects' use; includes blueprints of suggested layouts, lists of Standard sizes and units.

STEEL DRESSERS

Janes & Kirkland, 133-135 West 44th St., New York, N. Y.
The White House Line. Booklet. 7¾ x 5⅛ in. 24 pp. Illustrated. Describes and illustrates in detail WHITE HOUSE Steel Dressers and some of the separate units. Also contains typical layout and list of some of our clients.
Photographs. 5½ x 3½ in. Views of actual installations in private residences, schools, etc., sent on request.

STONE, BUILDING

Harrison Granite Company, 200 Fifth Avenue, New York, N. Y.
Harrison Granite Company. Clientele. 3¾ x 8¾ in. 24 pp. Illustrated. A partial list of clients with illustrations of examples of monuments and mausoleums.

Indiana Limestone Quarrymen's Association, Box 766, Bedford, Indiana.
Volume 3, Series A-3. Standard Specifications for Cut Indiana Limestone work. 8½ x 11 in. 56 pp. Containing specifications and supplementary data relating to the best methods of specifying and using this stone all building purposes.
Vol. 1. Series B. Indiana Limestone Library. 6 x 9 in. 36 pp. Illustrated. Giving general information regarding Indiana Limestone, its physical characteristics, etc.
Vol. 27. Series B. Designs for Houses of Indiana Limestone. 8½ x 11 in. 32 pp. Illustrated. Being the best designs submitted in competition for a detached residence faced with Indiana Limestone conducted by **The Architectural Review.**
Vol. 4, Series B. Booklet. New Edition. 8½ x 11 in. 64 pp. Illustrated. Indiana Limestone as used in Banks.

Tompkins-Kiel Marble Company, 505 Fifth Ave., New York, N. Y.
Reproductions in natural colors of imported and domestic marbles and stone for interior and exterior uses.
Bulletins. 9¾ x 12¾ in. Illustrating buildings of various types in which Tompkins-Kiel Marble Company's imported and domestic marbles and stone have been used.

STORE FRONTS

Kawneer Co., The, Niles, Mich.
A Collection of Successful Designs. Catalog. 9¾ x 6½ in. 64 pp. Illustrated. Showing by use of drawings and photographs many types of Kawneer Solid Copper Store Fronts.

STUCCO

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.
For All Time and Clime. Booklet. 6 x 9 in. 48 pp. Illustrated. Describing the use of Bishopric stucco base and Bishopric plaster base.

STUCCO BASES

Bishopric Manufacturing Co., 103 Este Ave., Cincinnati, Ohio.
Specifications and Working Details. Booklet. 7¾ x 10½ in. Illustrated. Contains plainly written instructions for the use of stucco, stucco base, plaster base and insulation base.

STUCCO, MAGNESITE

American Magnestone Corporation, Springfield, Ill.
Catalog. 13 pp. Describes the quality, beauty and strength of Magnestone.

Muller & Co., Franklyn R., Waukegan, Ill.
Everlastic Magnesite Stucco, Booklet. 8½ x 11 in.

TERRA COTTA

National Terra Cotta Society, 19 West 44th St., New York, N. Y.
Standard Specification for the Manufacture. 8½ x 11 in. 12 pages. Furnishing and Setting of Terra Cotta, consisting of complete detail Specification, Glossary of Terms Relating to Terra Cotta and Short Form Specification for incorporating in Architect's Specifications.

TERRA COTTA—Continued

Architectural Terra Cotta. Standard Construction. 10½ x 14 in. 72 plates of typical details showing the correct principles in the jointing, anchoring, bonding, etc. of terra cotta. Cloth bound.
Present Day Schools, 8½ x 11 in. 32 pages. Illustrating 42 examples of school architecture with article upon school building design by James O. Betelle, A. I. A.
Better Banks. 8½ x 11 in. 32 pages. Illustrating many banking buildings in terra cotta with an article on its use in bank design by Alfred C. Bossom, Architect.

Northwestern Terra Cotta Co., The, 2525 Clybourn Ave., Chicago, Ill.
Booklet. 8¼ x 11 in. 77 pp. Illustrated. Showing in a concise way the usefulness of terra cotta.

The New Jersey Terra Cotta Co., Singer Bldg., New York, N. Y.
Store Fronts in Architectural Terra Cotta. Booklet. 8½ x 11 in. 44 pp. Illustrated. Photographs, measured drawings, designs and illustrations of decorative motifs make up an interesting booklet which will be forwarded upon request.

THERMOSTATS—See Heating Equipment

TILE, FLOOR AND WALL

Associated Tile Manufacturers, The, Beaver Falls, Pa.
Basic Information. Booklet. 7½ x 10⅝ in. 24 pp. Illustrated. Ask for Booklet K-200.
A publication issued for architects, engineers and educators to acquaint them with methods of grading, derivation of sizes and shapes, variety of colors, kind of finishes, nomenclature and ingredients and processes insofar as they lead to a better understanding of the product and its uses.
Basic Specifications and Related Documents. Booklet. 7½ x 10⅝ in. 38 pp. Ask for Booklet K-200.
The Basic Specification proper gives in detail the procedure to be followed with respect to any kind of tile installation in connection with practically every type of construction. The Related Documents or work sheets are designed to call attention to optional application methods and materials.
Swimming Pools. Booklet. 8½ x 11 in. 32 pp. Illustrated. Issued for the use of architects and engineers as a handbook on swimming pools and their construction.
Bringing the Crowds to Your Market. Booklet. 8½ x 11 in. 16 pp. Illustrated in color. Shows use of tile for the modern sanitary market.

B. Mifflin Hood Brick Co., Atlanta, Ga.
Burned Clay Products. Booklet. 9½ x 12½ in. 47 pp. Illustrated. Shows different uses of brick, but presents particularly the various uses of quarried floor tile. Free to architects and engineers.

Stedman Products Company, South Braintree, Mass.
Six-page folder. 8½ x 10½ in. Illustrated in colors, giving complete description of Stedman Naturized Flooring, Tiles, Wainscoting, Sanitary Bases, Stair Treads, etc. Technical data, recommendations and special flooring service.

The Vitrolite Company, 133 W. Washington St., Chicago, Ill.
Toilet Partitions and Wainscoting. Booklet. 8½ x 11 in. 32 pp. Illustrated. States comprehensive facts about Vitrolite, its adaptability and advantages as a slab material for wainscoting and toilet partitions, wall and ceiling surfacing, etc. Installations shown, with blue prints and architects' specification data.
Thoughts of Home. Booklet. 8½ x 11 in. 32 pp. Illustrated. Describes and shows practical application of Vitrolite and the artistic and economical results possible in its use in the home, for bathrooms, kitchen, pantry, etc.

TILE, FLOOR AND WALL

The Associated Tile Manufacturers, Beaver Falls, Pa.
Ceramic Mosaic, Standardized Sheets and Patterns. Booklet. 10⅝ x 7½ in. 32 pages. Illustrated in color. Gives valuable data on standardizing of mosaic sheets and patterns.

TILE, HOLLOW

National Fire Proofing Co., 250 Federal St., Pittsburgh, Pa.
Standard Wall Construction Bulletin 174. 8½ x 11 in. 32 pp. Illustrated. A treatise on the subject of hollow tile wall construction.
Natco on the Farm. 8½ x 11 in. 38 pp. Illustrated. A treatise on the subject of fire safe and permanent farm building construction.
Natco Homes and Garages. Booklet. 7 x 10 in. 32 pp. Illustrated. Showing the use of Natco Hollow Tile for private residences.

VACUUM CLEANING APPARATUS

The Spencer Turbine Company, Hartford, Conn.
Vacuum Cleaning Apparatus for all purposes. Booklet. 32 pp. Illustrated. Complete information on product, showing prominent buildings equipped with this system.

VALVES

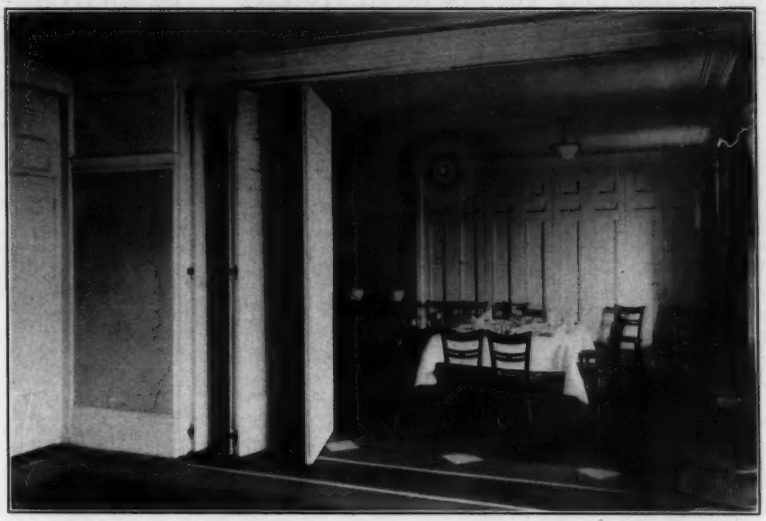
Crane Co., 836 S. Michigan Ave., Chicago, Ill.
No. 50 Steam Pocket Catalog. 4 x 6½ in. 775 pp. Illustrated. Describes the complete line of the Crane Co.

Gorton & Lidgerwood Co., 96 Liberty St., New York, N. Y.
Gorton Quarter-Turn Packing-Lock Valves. Booklet. 4¼ x 7¼ in. 32 pp. Illustrated. Describing a new type of valve for all systems of steam, hot water and vacuum heating.

Illinois Engineering Co., Racine Ave., at 21st St., Chicago, Ill.
Catalogue. 8½ x 11 in. 88 pp. Illustrated.

Jenkins Bros., 80 White Street, New York.
The Valve Behind a Good Heating System. Booklet 4½ x 7¼ in. 16 pp. Color plates. Description of Jenkins Radiator Valves for steam and hot water, and brass valves used as boiler connections.
Jenkins Valves for Plumbing Service. Booklet. 4½ x 7¼ in. 16 pp. Illustrated. Description of Jenkins Brass Globe, Angle Check and Gate Valves commonly used in home plumbing, and Iron Body Valves used for larger plumbing installations.

McCABE Hardware *for* Accordion *or* Folding Doors



McCABE Hangers

are specified for the most exacting usage. Some of the finest private homes, club-houses and hotels in this country and in Europe are equipped with McCabe hangers. (Names on request.)

Any number of doors may be placed in the opening, commencing with a one-half door width to jamb at either side of opening.

Allow one carriage, which should be placed on exact center of the top rail of door, on each alternate door only.

When you use McCabe Hangers you can arrange the partitions as you want them, as McCabe hangers can be as easily applied as the other hardware in building.

Write for "Brown Book and Detail Set"

There is a McCabe Hanger for every sliding and rolling requirement.

Type No. 72

Single hung from center of each alternate door. No track or guide required in floor. For Accordion Doors.

Type No. 402

Doors hung from edge. With roller floor guide. For doors folding to one side of partition.

Type No. 405

Doors hung from edge. To roll on floor track and guided above. Used where head room is limited.

McCABE

HANGER MANUFACTURING COMPANY

425-27 West 25th St. New York, N. Y.

SELECTED LIST OF MANUFACTURERS' PUBLICATIONS—*Continued from page 100*

VARNISH—See Paints, Stains, Varnishes

VENETIAN BLINDS

Burlington Venetian Blind Co., Burlington, Vt.
Venetian Blinds. Booklet. 4½ x 7½ in. 32 pp. Illustrated. Describes the "Burlington" Venetian blinds, method of operation, advantages of installation to obtain perfect control of light in the room.

VENTILATION

Clarage Fan Company, Kalamazoo, Mich.
Catalog No. 52. 8½ x 11 in. 84 pp. Illustrated. Describes Clarage Kalamazoo Multiblade Fans and Heaters for use in schools, churches, hospitals and industrial plants. Engineering data, capacity tables and dimensions included.

WALL BOARDS

Carey Co., The Philip, Cincinnati, Ohio.
Carey Board for Better Building. Catalog. 6 x 9 in. 32 pp. Illustrated.

WARDROBES

W. L. Evans, 700 Block E, Washington, Ind.
Pictures That Talk. Catalog. 8½ x 11 in. 16 pp. Illustrated. Wardrobes, in units, with Evans Vanishing Doors, for schools, hospitals, hotels, office buildings and homes.

The J. G. Wilson Corporation, 11 East 36th St., New York, N. Y.
Catalog. 8½ x 11 in. 20 pp. Illustrated. Photographs and plans with dimensions for architects' use.

WASTE RECEPTACLES

Cortes Ward Company, Inc., 245 West 55th St., New York, N. Y.
Waste Receptacles. Catalogue contains complete illustrations and specifications of the different uses of Solar Self Closing Receptacles.

WATER HEATERS

Ruud Manufacturing Co., Pittsburgh, Pa.
Ruud Gas Water Heaters. Bulletins in filing folder describing instantaneous automatic water heaters for small homes and special uses, multi-coil automatic storage systems, automatic storage systems and tank water heaters. Details for connections, hot water service and specifications. 19 pp. Illustrated. 8½ x 11 in.
Ruud Automatic Storage Systems. Catalog of automatic hot water storage systems for domestic, industrial and commercial uses. Details, capacities, dimensions and other data. 24 pp. Illustrated. 6 x 9 in.
Ruud Multi-Copper-Coil Automatic Storage Systems Catalog describing automatic hot water storage systems of large capacity for large residences, apartment buildings, hotels, hospitals, gymnasiums and factories. Details, capacities and dimensions for complete line. 32 pp. Illustrated. 6 x 9 in.

WATERPROOFING

The General Fireproofing Company, Youngstown, Ohio.
Waterproofing Series A 507-9. Booklet. 8½ x 11 in. 42 pp. Illustrated. Thoroughly covers subject of waterproofing concrete, wood and steel preservatives, dustproofing and hardening concrete floors, and accelerating the setting of concrete.

Ruberoid Co., The, 95 Madison Ave., New York.
Impervite. Circular. 8½ x 11 in. 4 pp. Illustrated. An integral water-proofing compound for concrete, stucco, cement, mortar, etc.

Sandusky Cement Co., Dept. F., Cleveland, Ohio.
Medusa Waterproofing. Booklet. 6¾ x 9 in. 38 pp. Illustrated.

Sonneborn Sons, Inc., L., 116 Fifth Ave., New York.
Pamphlet. 3¾ x 8¾ in. 8 pp. Explanation of waterproofing principles. Specifications for waterproofing walls, floors, swimming pools and treatment of concrete, stucco and mortar.

WATER PURIFIERS

Wallace & Tiernan Company, Newark, N. J.
Protecting N. Y. Water Supply. Booklet. 10 x 7 in. 24 pp. Illustrated. Describes the chlorinating equipment used for sterilizing N. Y. City water supply; also equipment suitable for sterilizing water supplies of municipalities, industrial plants, private residences, etc.

WATER SOFTENERS

Permutit Company, The, 440 Fourth Ave., New York, N. Y.
Permutit-Water softened to No (Zero) Hardness. Booklet. 8½ x 11 in. 32 pp. Describing the original Zeolite process of softening water to zero hardness. An essential for homes, hotels, apartment houses, swimming pools, laundries, textile mills, paper mills, ice plants, etc., in hard water districts.

WEATHER STRIPS

Athey Company, 6015 West 65th St., Chicago, Ill.
Athey Cloth Lined Metal Weatherstrip. A metal weatherstrip, the rib running in a cloth-lined zinc channel, a perfect seal for the window, resisting all drafts and dirt, making a silent guide for the sash. Two years savings in fuel pays cost of installation.

Monarch Metal Products Co., 5000 Penrose St., St. Louis, Mo.
Monarch Metal Weatherstrips, A. I. A. Class 19 e 14. Manual. 7½ x 10¾ in. 48 pp. Illus. Designed for architects and specification writers, showing details of windows, doors and other openings and the proper manner of installing Monarch strips. It also shows various strips made by this company. Fourteen pages are devoted to window leakage and radiation calculations.

The Higgin Manufacturing Co., Newport, Ky.
Higgin All-Metal Weather Strips. Booklet. 6 x 9 in. 12 pp. Illustrated in colors. Describes various types of Higgin Weather Strips for sealing windows and doors against cold and dust.

WINDOW HARDWARE, CASEMENT

Hoffman Mfg. Co., Andrew, 900 Steger Bldg., Chicago, Ill.
Hoffman Casement Fixtures. Architects' Portfolio. 8½ x 11 in. 30 pp. Loose-leaf. Scale details for mill-work, installation, etc., in new and old work.

Monarch Metal Products Co., 5000 Penrose St., St. Louis, Mo.
Monarch Casement Hardware. A. I. A. Class 27 c 2. Manual. 7½ x 10¾ in. 20 pp. Shows details of casement windows and manner of installing Monarch casement hardware, for both outswinging and inswinging types. Monarch control locks are designed for installation under sill and to operate outswinging casements without removing screens.

Richards-Wilcox Mfg. Co., Aurora, Ill.
Casement Window Hardware. Booklet. 24 pp. 8½ x 11 in. Illustrated. Shows typical installations, detail drawings, construction details, blue-prints if desired. Describes AiR-Way Multifold Window hardware.

WINDOWS, CASEMENT

Crittall Casement Window Co., 10951 Hearn Ave., Detroit, Mich.
Catalog No. 22. 9 x 12 in. 76 pp. Illustrated. Photographs of actual work accompanied by scale details for casements and composite steel windows for banks, office buildings, hospitals and residences.

Hoffman Mfg. Co., Andrew, 900 Steger Bldg., Chicago, Ill.
Hoffman Casements. Architects' Portfolio. 8½ x 11 in. 30 pp. Looseleaf. Scale details for mill-work, installation, etc., in new and old work.

Hope & Sons, Henry, 103 Park Avenue, New York.
Catalog. 12¼ x 18½ in. 30 pp. Illustrated. Full size details of outward and inward opening casements.

David Lupton's Sons Co., Allegheny Ave., and Tulip St., Philadelphia, Pa.
Casements and Double Hung Windows. Catalog. 8½ x 11 in. 44 pp. Illustrated. Shows new Lupton Casements and Double Hung Windows, with profuse illustrations and full details.

WINDOWS, STEEL AND BRONZE

Detroit Steel Products Company, Detroit, Mich.
Fenestra Basement Windows. Booklet. 3¾ x 6¼ in. 16 pp. Illustrated. Describes steel basement windows, their advantages, details and specifications for installation.
Fenestra Reversible Ventilator Windows. Booklet. 8½ x 11 in. 20 pp. Illustrated. Describes the details of this new model window, as well as the variety it offers for attractive architectural design.
Fenestra Counter-Balanced Windows. Catalog. 8½ x 11 in. 111 pp. Illustrated. Details and specifications are thoroughly covered in the Fenestra General Catalog.
Fenestra Industrial Window Walls. Catalog. 8½ x 11 in. 111 pp. Illustrated. Details and specifications, with photographic illustrations, are thoroughly covered in the Fenestra General Catalog.

The Kawneer Company, Niles, Mich.
Kawneer Simplex Windows. Catalog. 8½ x 10½ in. 16 pp. Illustrated. Complete information, with measured details, of Kawneer Simplex Weightless Reversible Window Fixtures, made of solid bronze. Shows installations in residences and buildings of all sorts.
Detail Sheets and Installation Instructions. Valuable for architects and builders.

David Lupton's Sons Co., Allegheny Ave. and Tulip St., Philadelphia, Pa.
Lupton Service—Products No. 11. Book. 8½ x 11 in. 192 pp. Illustrated. The full line of Lupton products described and illustrated. Separate chapter on Designing Service. Many new types of steel sash for apartments, hotels, etc., shown.
Catalog No. 110. 8½ x 11 in. 72 pp. Illustrated. A condensed version of the No. 11 or general catalog. The new Lupton Projected Sash completely described.
Air and Light in Machine Shops. Booklet. 6 x 9 in. 42 pp. Illustrated. The proper building layout and selection of the right types of steel sash for best results in daylighting and ventilating in machine shops.

Truscon Steel Company, 250 W. Lafayette Blvd., Detroit, Mich.
Truscon Steel Windows. Catalog. 8½ x 11 in. 80 pp. Illustrated. Contains complete data on all types of Truscon Steel Windows.

WOOD—See also Millwork

American Walnut Mfrs. Association, 618 So. Michigan Blvd., Chicago, Ill.
American Walnut. Booklet. 7 x 9 in. 45 pp. Illustrated. A very useful and interesting little book on the use of Walnut in Fine Furniture with illustrations of pieces by the most notable furniture-makers from the time of the Renaissance down to the present.
Real American Walnut Furniture. Folder. 8½ x 11 in. 4 pp. Illustrated. Tells how to identify the genuine and avoid the substitute in buying "Walnut" furniture.

Curtis Companies Service Bureau, Clinton, Iowa.
Better Built Homes, Vols. XV-XVIII incl. Booklet. 9 x 12 in. 40 pp. Illustrated. Designs for houses of five to eight rooms, respectively, in several authentic types, by Trowbridge & Ackerman, architects, for the Curtis Companies.

Pacific Lumber Company, 332 So. Michigan Ave., Chicago, Ill.
California Redwood. Booklet. 9 x 12 in. 36 pp. Illustrated. Describes in a general way the production, manufacture and various uses of California Redwood.
Redwood Construction Digest. Booklet. 8½ x 11 in. 16 pp. Illustrated. Redwood and Its Uses in the Construction Field. Contains specifications and other information of interest to architects and builders generally.

WOOD FINISHES—See Paints, Varnishes, Stains

Simple to Install Operate and Maintain

The P-A-X is similar to the Automatic Telephone equipment being so widely adopted for city service but is modified to meet the requirements of private interior communication. A typical installation consists of a central automatic switchboard and as many P-A-X (automatic) telephones as are required.

The switchboard is entirely self-contained, enclosed in a glass cabinet sufficiently attractive in design and finish to be installed in a conspicuous place.

Each P-A-X telephone is connected to the switchboard by a single pair of wires and serves the multiple purpose of code call sender, fire alarm box, watchman's station and interior telephone.

By a simple manipulation of the dial any or all of the Automatic Electric Services may be brought into use and controlled.

There are no keys or pushbuttons to confuse the user and complicate maintenance. The attention of one man for 15 minutes a week is ample to keep a 50-station system in perfect order.

Our engineers are ready to co-operate with you in surveying your client's needs and making recommendations. Wire or write our nearest office.

The P-A-X augments and completes but neither supplants nor connects with local or long distance telephone service.

Automatic Electric Company

ENGINEERS, DESIGNERS & MANUFACTURERS OF THE AUTOMATIC TELEPHONE IN USE THE WORLD OVER

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Cleveland, 801 Cuyahoga Bldg.
Cincinnati, 827 Union Central Bldg.
Detroit, 525 Ford Bldg.
Kansas City, 1510 Waldheim Bldg.
San Francisco, 37 California St.
Los Angeles, 238 San Fernando Bldg.

In Canada—Address
Northern Electric Co., Ltd., 121 Shearer St., Montreal, P. Q.

Abroad—Address
International Automatic Telephone Co., Ltd., 60 Lincoln's Inn Fields, London, W. C. 2, England

In Australia—Address
Automatic Telephones, Australasia, Ltd., 207 Macquarie Street, Sydney, Australia

P-A-X TRADE MARK

THE PRIVATE AUTOMATIC EXCHANGE

More than a private telephone exchange—the Automatic Electric Services of the P-A-X include and co-ordinate interior telephony, code call, conference, watchman service and all other inter-communication needs

The Shallow Line of Flush Receptacles supplements the Shallow Line of H & H Push Button and Tumbler Switches—completely providing for thin partition wiring.

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complete offering of

CONVENIENCE OUTLETS

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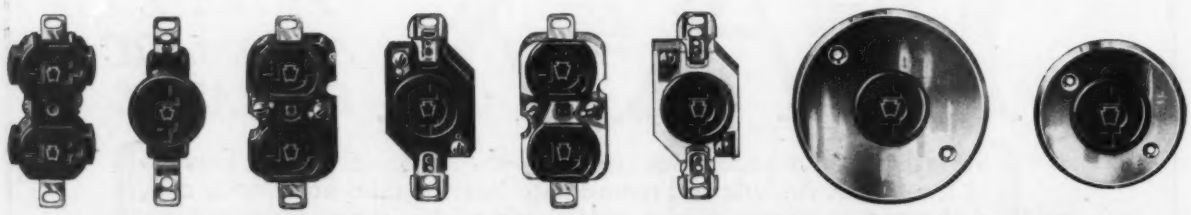
Composition and Porcelain

They have the "parts," they have the appearance. They have the name—and what that says *for* the workmanship.

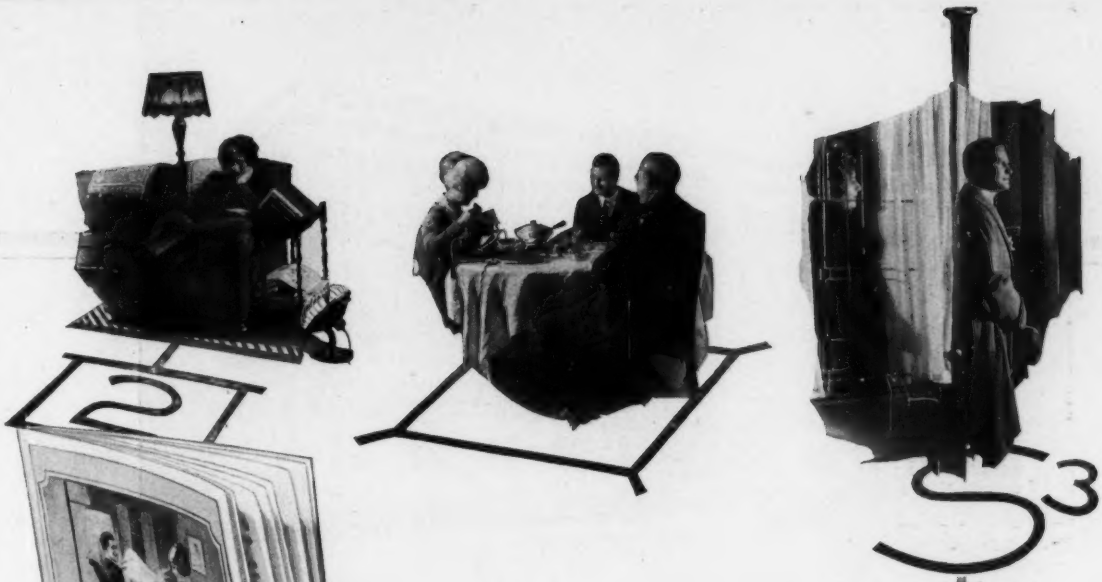
Rugged terminals; solidly anchored contacts. Neat designs *and* careful finishing. A little pride in the job of manufacturing—which the architect shares in approving.

But for all of that, the net price *is* exceedingly low. Your electrical contractor or engineer can use this product of H&H on a competitive-bid basis. For catalogue data, list prices and the like, write *and*

Get the Convenience Outlet Folder



THE HART & HEGEMAN MFG. CO. HARTFORD, CONN.



The Book that thousands have sent for!

Attention is now being directed—through publicity, and exhibits to complete house-wiring and quality wiring devices installed by dependable and experienced contractors.

The booklet—"The Home of a Hundred Comforts"—which thousands of prospective home builders have sent for, is available to architects upon request. Address Section F-12 Merchandise Department, General Electric Company Bridgeport, Connecticut.

SYMBOLS OF COMFORT TO THE HOME-BUILDER

In explaining to the housekeeper the symbols for convenience outlets, floor receptacles, and three- and four-way switches, the architect never has to explain the housekeeping comfort that their installation assures.

By providing liberally for the use of all electrical comforts—present and future—architects are actually building into the house an added value that is far greater than the wiring cost.

Equipped with wiring devices of established dependability, a house will hold its "convenience value" permanently.

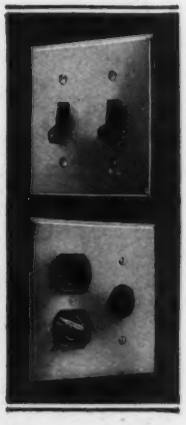
G-E Reliable Wiring Devices, nationally known as the standard of excellence, are the assurance of dependable electrical service.

There is a G-E Wiring Device for every service in every class of building.

Merchandise Department
General Electric Company
Bridgeport, Connecticut

G-E TWO-GANG TUMBLER SWITCH

G-E TWIN CONVENIENCE OUTLET AND BULLSEYE



GE Wiring Devices

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A GENERAL ELECTRIC PRODUCT

Administration Building, Fisk Rubber Company, Chicopee Falls, Mass.

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BUFFALO
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Standard keeps time for the Fisk Rubber Company

IN both the main plant, shown below, and in the administration building, of the Fisk Rubber Company, Standard makes every minute count.

Where time is money, as it is in industry, no measurement has been found to be more reliable than the Standard Electric Time System.

Because the Standard Company has for nearly forty years specialized in the manufacture and development of Electric Time Systems, it has a practical understanding of the engineering problems involved in the installation of such equipment. This experience is available to the architect.

Expense and detail work can be saved if the architect will make use of the Standard free cooperative service.

Use the coupon. Send it to the nearest branch.

The Standard Electric Time Company, *60 Logan Street, Springfield, Mass.*

Fisk Rubber Company, Chicopee Falls, Mass.

Free Service to Architects

The Standard Electric Time Co.: Submit to me gratis specifications, wiring diagram and estimate for installation of "Standard" Time System according to the rough floor plans, showing approximate dimensions and data herewith attached. It is understood that this service is rendered free.

Name.....
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Standard Electric Time

Makes every minute count

Some economy features of this new loud-speaking Inter-Phone

Western Electric
INTER-PHONE
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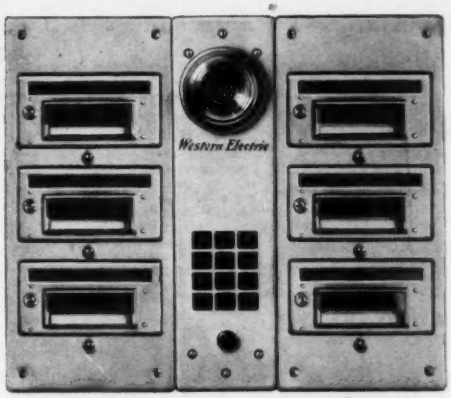

The new Western Electric loud-speaking Inter-Phone is so designed that it assures economies in installation and maintenance.

It operates on two wires, where other systems require three.

The equipment consists of a cordless type Inter-Phone, which eliminates all projecting parts and provides against theft of receivers and cords.

The telephone set proper has a locking-in arrangement which further protects against theft of the complete unit.

This Inter-Phone provides for communication between apartments and janitor, laundry or tradesman—thus doing away with the need for special "service" set.

Write for Bulletin

For your information we have just prepared an Architect's Bulletin which answers your questions as to cost, installation data and operation of Western Electric Inter-Phones. Let us send your copy at once.

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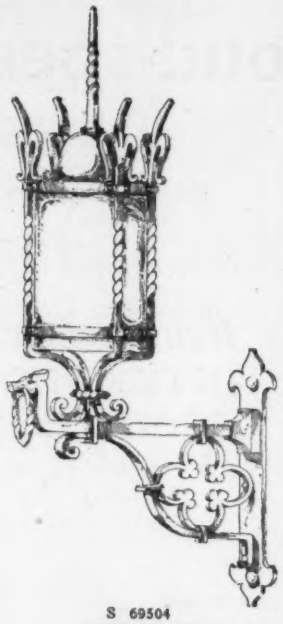
Lighting Equipment

IN designing "period" lighting equipment it is frequently desirable to follow the "spirit" of the period rather than the mechanical formation of examples which would not be practicable with present-day methods or needs.

All such considerations are given careful attention in our designing. "Ready-made" equipment practically never is suitable in proportion and detail for work of an exacting character and new designs in perfect harmony with the feeling or atmosphere created by the architect are invariably made.

"Hand-made" execution of period designs by skilled artisans of long experience insures a satisfactory creation.

Our facilities and experience in design and manufacture are at your disposal.



S 69504
BRACKETED LANTERN
A sturdy, hand-forged iron lantern fashioned in the bold sketchy style of the early Italian craftsmen and with strict observance of those principles of design which define the period.

THE EDWIN F. GUTH COMPANY, ST. LOUIS, U.S.A.

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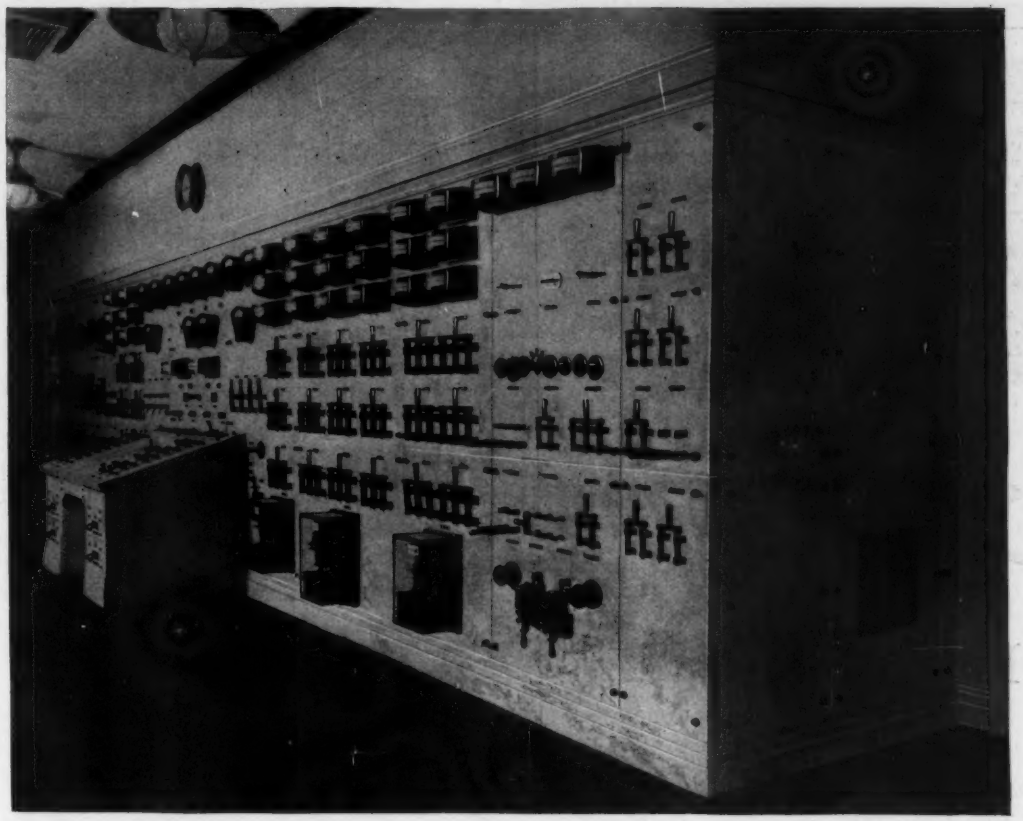

Bankers Trust Co. Building, New York City. Trowbridge & Livingston, Architects; Meyer, Strong and Jones, Consulting Engineers; Mark Eidlitz & Sons, Builders.

Switchboards in Architecture

The practice of architecture requires that every building be provided with electric service. The control of this service is accomplished through a switchboard of some sort, be it an entrance panel, containing only meter and switch in a small bungalow, or a more complicated type of switchboard in large commercial buildings.

Whatever the size or condition of supply or distribution, the General Electric Company manufactures the necessary equipment and has the requisite knowledge and facilities for the construction of a finished product.

The architectural plan or limitations of space may make certain demands which only the best of engineering skill and the broadest of installation experience can satisfactorily meet.

The architectural requirements of a building are most efficiently met when the switchboard not only serves the electrical needs of the occupants but also, in appearance and arrangement, harmonizes with the structure.

This advertisement is part of the story of the building of quality switchboards. Our ambition is to make this story of sufficient interest to merit a place in your file No. 31c2.

General Electric Company
Schenectady, N. Y.

54C-82

GENERAL ELECTRIC

James S. Pigott, Architect, Newark, N. J.
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Holtzer-Cabot

Hospital Signaling Systems

The New North Wing of the Newark City Hospital adds another big hospital to the ever increasing list equipped with Holtzer-Cabot signaling systems.

Fifty years of leadership in the manufacture and development of Hospital Signaling Systems is a protection that the Architect, the Engineer, the Hospital Management and Working Staff cannot conscientiously overlook.

This is why more and more Architects and Engineers are specifying Holtzer-Cabot Systems exclusively.

Architects, Engineers and Members of Building Boards are invited to write for brochures "Signal Systems for Hospitals" and "Signal Systems for Schools."

The Holtzer-Cabot Electric Co.
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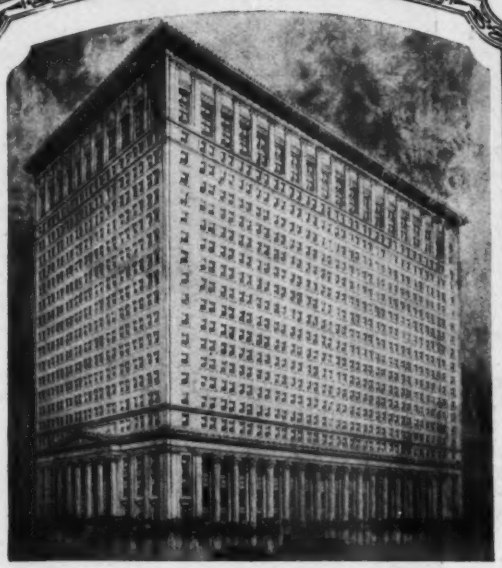
Cleveland, Ohio, 517 Union Bldg.
Philadelphia, Pa., 805 Otis Bldg.
Detroit, Mich., 1051 Book Bldg.
Atlanta, Ga., 1511 Healy Bldg.



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ILLINOIS MERCHANTS BANK
CHICAGO, ILL.

equipped with

FRINK REFLECTORS

INCLUDING
BANK SCREEN REFLECTORS
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Our Engineering Department is co-operating with the leading architects in laying out and designing the lighting of prominent buildings throughout the country. We hope we can be of service to you.

"Specify Frink Reflectors"

I.P. FRINK, Inc.
24th St. and 10th Ave., New York

Chicago, Ill. Monadnock Bldg.	San Francisco, Cal. 77 O'Farrell Street	Philadelphia, Pa. Franklin Trust Bldg.
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Associated with Robert Mitchell Co., Ltd.
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The 4 Major Problems of Ash Removal—

the G&G ELECTRIC Telescopic Hoist With Automatic Stop and Gravity Lowering Device

THE responsibility of selecting proper equipment for ash removal rests with the specification writer. As an aid to the large group of specification writers who have occasion to specify G&G Ash Removal Equipment, we publish the four general classifications covering ash removal—and the proper G&G Telescopic Hoist Equipment to do the work. Where there is a special problem involving an unusual combination of conditions, ask us to help you select the proper model.

the G&G ELECTRIC Telescopic Hoist with Automatic Gear Shifting Brake Device and Silencer

PROBLEM No. 1

Small volume of ashes (about 6 cans daily)
Short distance of lift (about 10 feet)
Hoistway opening against side of building.

SOLUTION

SPECIFY a Model A G&G Telescopic Hoist operated by hand power. Hoisting head revolves on ball bearings and can is deposited on pavement clear of hoistway without tilting or spilling of ashes. Empty cans are lowered by gravity under control of power band brake with brake lining. One man can easily perform the entire operation of ash removal. Operator exerts a pressure of only 12¼ lbs. in raising an average filled can weighing 175 lbs. at speed of 30 feet a minute.

PROBLEM No. 2

Small volume of ashes (about 6 cans daily)
Short distance of lift (about 10 feet)
Hoistway opening near curb or in driveway

SOLUTION

SPECIFY a Model B G&G Telescopic Hoist with Overhead Crane, operated by hand power. Ashes are dumped directly into wagon without rehandling cans at grade level. One man can easily perform the entire operation of ash removal. The Hoist occupies little space and when not in use no part shows above grade. Filled cans are raised at a speed of 30 ft. a minute and hoisting pressure of only 12¼ lbs. is required for the average can weighing 175 lbs.

PROBLEM No. 3

Large volume of ashes (more than 15 cans daily)
Deep hoisting area (15 feet or more)
Hoistway opening against side of building.

SOLUTION

SPECIFY a Model E G&G Telescopic Hoist electrically operated. This Hoist is built for heavy continuous duty and tests have proven it to be astonishingly economical in current consumption. While a large volume of ashes might make it desirable to employ more than one man, Hoist can be practically operated by one man and is therefore a labor saver. Loads up to 500 lbs. are raised at a speed of 60 ft. a minute and are lowered by gravity.

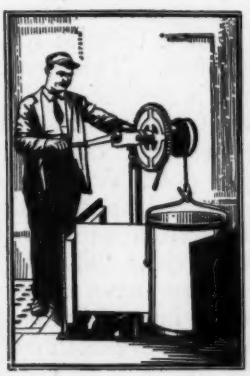
PROBLEM No. 4

Large volume of ashes (more than 15 cans daily)
Deep hoisting area (15 feet or more)
Hoistway opening near curb or in driveway

SOLUTION

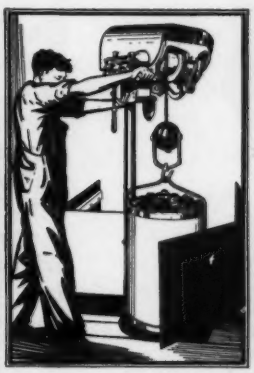
SPECIFY a Model D G&G Telescopic Hoist electrically operated. This Hoist has the Overhead Crane feature which makes it possible to dump ashes directly into wagon without rehandling at grade. The motor is mounted near base of Hoist and two men can easily handle a large quantity of ashes. Loads up to 300 lbs. are raised at a speed of 60 ft. a minute. Surprisingly little current is used in operation of this Hoist.

Model A

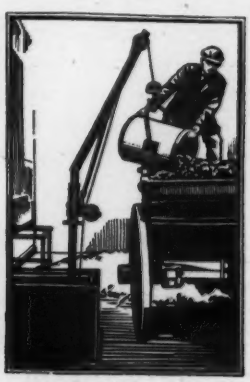


Model B

Model E



Model D



And Keep This in Mind

The safety and labor-saving features built into these Hoists can be secured only by the installation of complete G&G Equipment (Hoist, Operator's Ladder, Swing Bail Hoisting Cans, Checkered Steel or Vault Light Sidewalk Doors, with Spring Guard Gates, Automatic Sidewalk Door Opening and Closing Device, Warning Gong and Ash Can Truck.)

Full description, illustrations, scale drawings and specifications in Sweet's, pages 2199-2207

GILLIS & GEOGHEGAN, 544 WEST BROADWAY NEW YORK CITY

Which?

SHALLO or SHALLOW

What might be shallow to an ocean liner would be quite deep enough for a canoe. Hence the word shallow might mean most any depth.

SHALLO, the name coined by the Arrow Electric Company, designates a complete line of flush devices with a definite limited dimension, one inch or less. This line contains every wall device that is desired, including the new single and duplex Convenience outlets for flush plates with or without doors, push button switches in single pole, double pole, three and four point with or without luminous button or lock, and Tumbler switches in the four styles with or without the Arrow "Glow-Tip". For your fall business you can save time and bother by using the "Shallo" line which is complete in all styles and is limited to one inch or less.

The Arrow Electric Company
HARTFORD, CONNECTICUT, U. S. A.

SHALLO MEANS

ELECTRICAL ARROW WIRING DEVICES

ARROW

The complete line of Wiring Devices

Carney, the cement perfected by forty years of experience, was used in the erection of the Churchill Apartments at Chicago, Illinois.
Architects: H. L. Stevens & Co., Chicago, Illinois.
Contractors: B-W. Construction Co., Chicago, Illinois.

The Sale of Carney Steadily Increases

EXPERIENCE has shown architects and contractors generally that there is a great saving in building costs when Carney mortar is used. They also know from experience that Carney mortar builds a better wall. These facts have resulted in enormous increases in the sale of Carney. The increase in volume of our output is constant, regardless of business conditions.

Carney Has These Exclusive Merits

It requires no lime, assuring protection against adulteration or errors in mixing. Being more plastic and smoother working, the mason can work faster and easier on the wall. It lays the maximum number of brick to the barrel. It works perfectly in cold weather. It becomes harder than the brick and tile it binds, continuing to harden indefinitely as time goes on. It is ideal for wall bearing buildings. The final cost of a Carney wall is always lower. Contractors bid lower and do better work with Carney.

Carney is the perfected cement for brick and tile mortar.

This book tells the complete story of Carney. It will be sent free to anyone interested in building.

The Carney Company
Cement Makers Since 1883
Mankato, Minn.
Mills: Mankato, Minn., Carney, Minn.

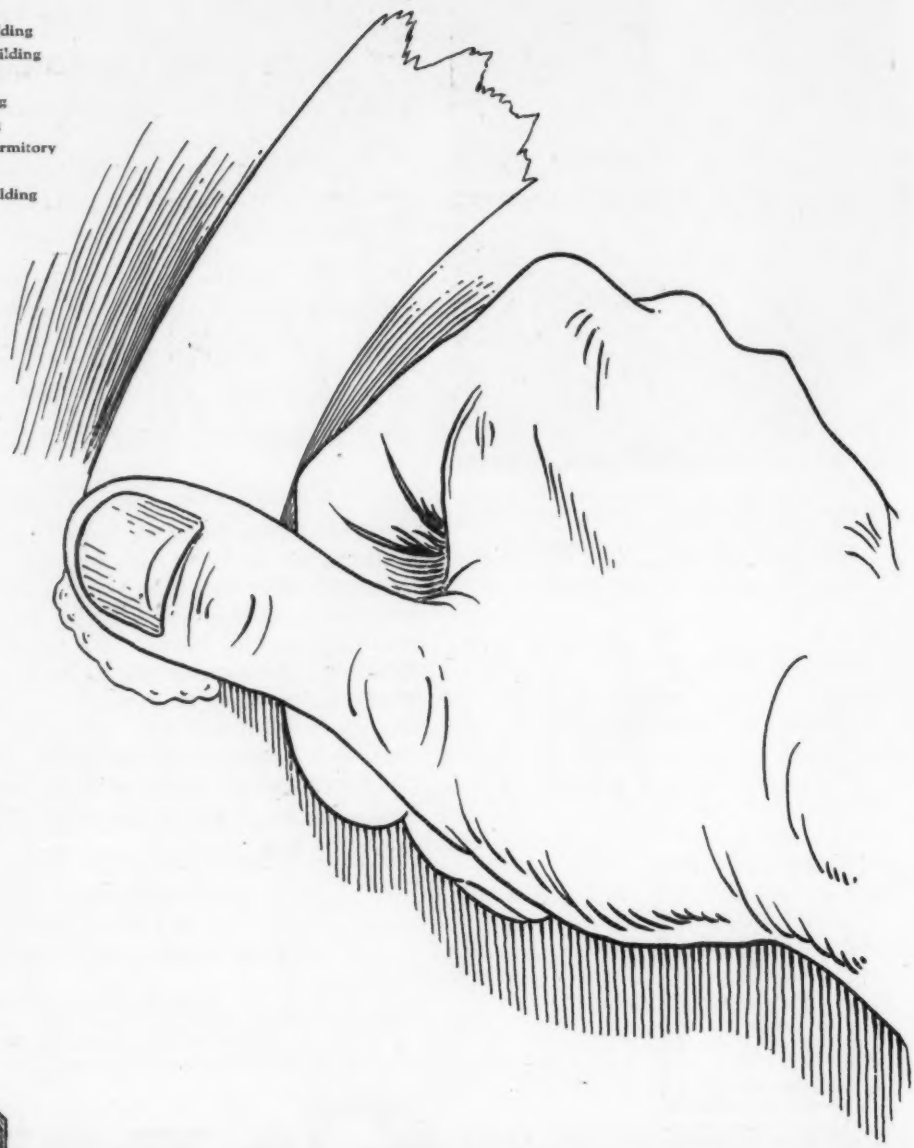
District Sales Offices:
Leader-News Bldg., Cleveland; Chamber of Commerce Bldg., Chicago; Omaha National Bank Bldg., Omaha; Syndicate Trust Bldg., St. Louis; Book Bldg., Detroit; Builders' Exchange, Minneapolis.

CARNEY
for Brick and Tile Mortar

Specifications: 1 part Carney to 4 parts sand.
(due to refined process of manufacture.)

A few of the prominent buildings in Pittsburgh in which Banner was used

Schenley Apartments
Mellon National Bank Building
Exchange National Bank Building
Union Trust Building
Bell Telephone Building
Joseph Horne Building
West Penn Hospital Nurses Dormitory
William Penn Hotel
Chamber of Commerce Building



Banner

Finishing
Lime

The Thumb Test

There is one convincing method of proving certain important qualities of finishing lime.

It's the thumb test.

Simply place a small quantity of the lime on a smooth, hard surface and press it out with a short firm stroke of the thumb.

If it's Banner Finish you can detect immediately the absence of coarse undesirable grit.

You can feel it s velvety smoothness.

It's this quality of super-fineness that makes Banner the finish that is easy to spread.

Besides, it is snowy white and free from all impurities.

Make a thumb test of Banner yourself---we'll send you enough lime for the purpose if you'll just ask us for it.

National Mortar and Supply Company

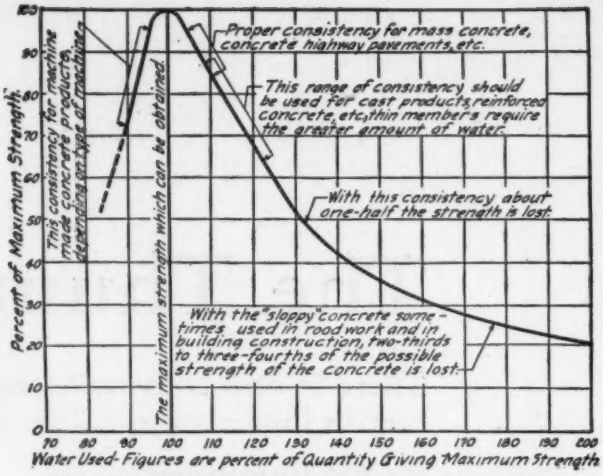
Federal Reserve Building

Pittsburgh, Pa.

Banner

Finishing
Lime

When One Pint of Water Wastes Two Pounds of Cement


Percent of Maximum Strength
Proper consistency for mass concrete, concrete highway pavements, etc.
This range of consistency should be used for cast products, reinforced concrete, etc., thin members require the greater amount of water.
With this consistency about one-half the strength is lost
With the "sloppy" concrete sometimes used in road work and in building construction, two-thirds to three-fourths of the possible strength of the concrete is lost.
This consistency for machine made concrete products, depending on type of machine
The maximum strength which can be obtained
0 10 20 30 40 50 60 70 80 90 100
70 80 90 100 110 120 130 140 150 160 170 180 190 200
Water Used- Figures are percent of Quantity Giving Maximum Strength

Effect of Quantity of Mixing Water on the Compressive Strength of Concrete
NOTE: In general construction, the maximum strength can rarely be obtained, but it is possible to obtain 70 to 90 per cent of the maximum strength without additional expense by restricting the quantity of mixing water.

Observe this curve closely. It shows impressively the effect of the quantity of mixing water on the strength of concrete.

It is now known that excess mixing water, not only weakens concrete, but that it is actually wasteful of cement. One pint of water more than necessary in a one-bag batch decreases the strength and resistance to wear as much as though two or three pounds of cement were left out.

Here is a fact, which if brought home to the superintendent and the foreman, can be of great practical value in raising quality on the job.

Wouldn't you like to have, right at hand for quick reference, a practical manual which tells how the quantity of mixing water can be closely controlled, so as to give concrete greater strength without using any more cement?

Then write today for our free booklet, "Concrete Data for Engineers and Architects." We will be glad to send you extra copies for superintendents and foremen.

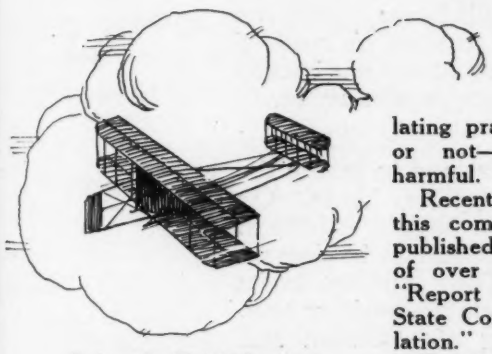
Take full advantage of the service the Portland Cement Association has to offer. One of the District Offices of the Association is always near you. Get acquainted with it.

PORTLAND CEMENT ASSOCIATION
A National Organization to Improve and Extend the Uses of Concrete

Atlanta	Denver	Kansas City	New York	San Francisco
Birmingham	Des Moines	Los Angeles	Parkersburg	Seattle
Boston	Detroit	Memphis	Philadelphia	St. Louis
Chicago	Helena	Milwaukee	Pittsburgh	Vancouver, B.C.
Dallas	Indianapolis	Minneapolis	Portland, Oreg.	Washington, D.C.
	Jacksonville	New Orleans	Salt Lake City	

This Is The Book

Do you know that before this book with its new teachings of ventilation could be written the whole theory of ventilation, as accepted to within the past few years, had to be proved unsound and antiquated.



Before the Wright brothers could teach the world to fly they first had to discard as useless, then reconstruct, the whole known science of air currents and forces.

A Book That Took Six Men Five Years to Write

HERE is a book that will take you fifteen minutes to read. But it will take you the rest of your life to forget what it says, because in fifteen minutes it will present to you an entirely new series of facts on a subject of vital importance to us all—room ventilation. The name of this book is "Beginning a New Era in School Ventilation."

Ten years ago a commission of prominent scientists and engineers, financed by philanthropists and empowered by the State of New York, undertook an exhaustive and authoritative study with the idea of determining once and for all whether modern ventilating practice was adequate or not—health giving or harmful.

Recently the findings of this commission have been published in a huge volume of over 620 pages entitled "Report of the New York State Commission on Ventilation."

For the benefit of those of you who are interested in the subject of room ventilation, and who cannot take the time to go through the great mass of detail in the original, we have prepared a digest of it and call it "Beginning a New Era in School Ventilation."

In it you will find authentic, proven information of incalculable value and interest. Information so revolutionary that it upsets the whole structure of facts about room ventilation as practiced today—information so carefully studied and proven that it lifts the veil of mystery that has so long enshrouded the practice of ventilation—facts so clearly set forth and so easily applied that you can incorporate them in any work you now have in hand.

To a copy of "Beginning a New Era in School Ventilation" you are most welcome. Write us today.

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Architects' Building
101 Park Ave., N. Y. City

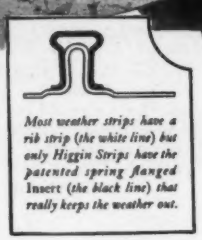
What you want in a Window
you get in the

AUSTRAL WINDOW

Represented throughout
United States and Canada

HIGGIN
ALL METAL WEATHER STRIPS

When winter tests... the architect's service!



Most weather strips have a rib strip (the white line) but only Higgin Strips have the patented spring flanged insert (the black line) that really keeps the weather out.

It is in the winter that a well-built home proves the reputation of the architect, and justifies its cost—if first-class design and honest construction are backed up by the most efficient weatherstrips obtainable.

Today architects are writing Higgin All-Metal Weatherstrips into their specifications to insure the client's satisfaction with his completed home. On windows and doors of every type Higgin All-Metal Weatherstrips have proved their efficiency by demonstration, tests and experience. They shut out drafts completely, maintaining a comfortable, uniform temperature with an actual saving of radiation and boiler capacity.

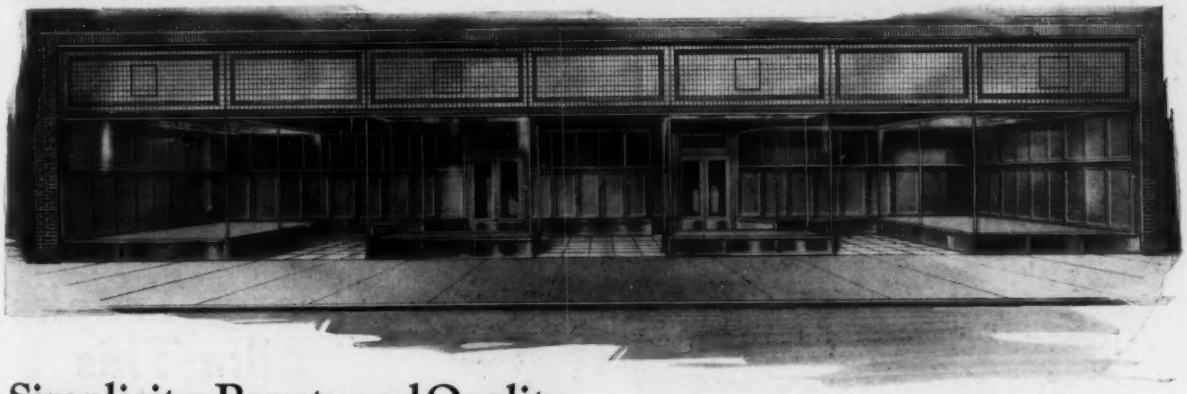
A Higgin service man is within call from your office. Your request will secure his personal cooperation in his specialty, and a crew of trained Higgin fitters will install the job. Higgin service is developed to fully protect the interests of yourself, your client, and Higgin reputation.

SEE OUR CATALOGUE IN SWEET'S

The HIGGIN Mfg. Co.
Newport, Ky.
Toronto, Canada.

Look in your telephone or city directory for the address of your local Higgin Service Office, or write the home office direct.

Manufacturers of Higgin All-Metal Weatherstrips and Higgin All-Metal Screens



Simplicity, Beauty and Quality

attained by using

Brasco Display Windows

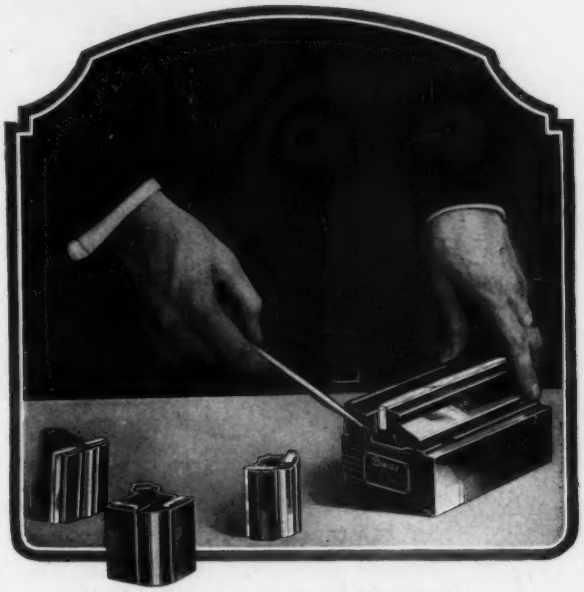
The Highest Standard Possible

INDIRECT screw pressure, great strength, glass safety, improved drainage, ease of installation, patented creosoted-wood core encased in heavy copper—these and other outstanding factors make possible the higher standard for store front construction established by Brasco.

To give the greatest ultimate satisfaction to your clients, to carry out your own ideas to the fullest extent and to assure best results in general, specify Brasco construction.

Write for catalog and detail sheets

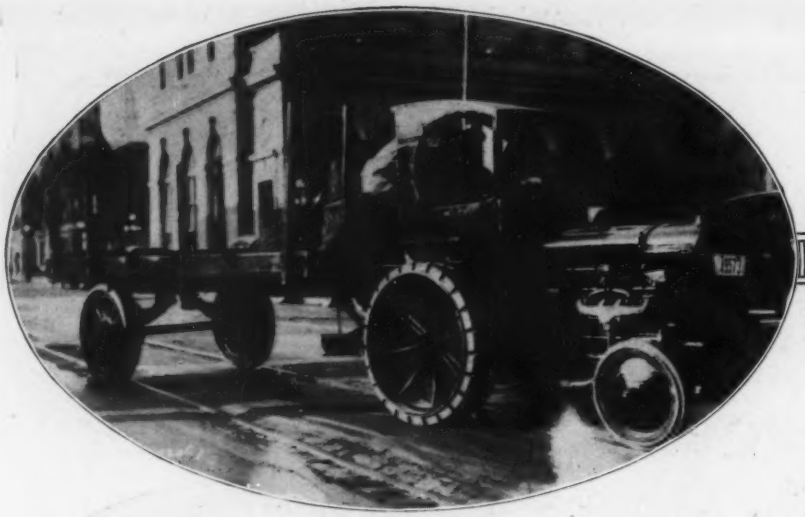
BRASCO MFG. COMPANY
5031 South Wabash Avenue, Chicago, Ill



Every architect should have these sample sections of Brasco, showing the patented creosoted wood core construction. Sent promptly upon request.

Brasco

COPPER STORE FRONTS



Heavy Trucks Like This Cause Vibration

that smashes show windows—Unless—

the glass is perfectly set. You can be assured that the construction will be permanent on any work you specify if you see to it that the glass is set in

Zouri

SAFETY METAL

STORE FRONTS

The famous Zouri Key-Set construction positively prevents glass breakage because it brings the glass into firm and even contact with the full face of the rigid rabbet—always. Furthermore, the Murnane Self-Adjusting Setting Blocks—an exclusive Zouri feature—make prying the glass into place unnecessary.

Detailed specifications, scale drawings and the benefit of our long experience in store front design, construction and installation —yours to command.

There is a distributor near you who carries a full line of Zouri and International Store Fronts. Ask us for his name—no obligation.

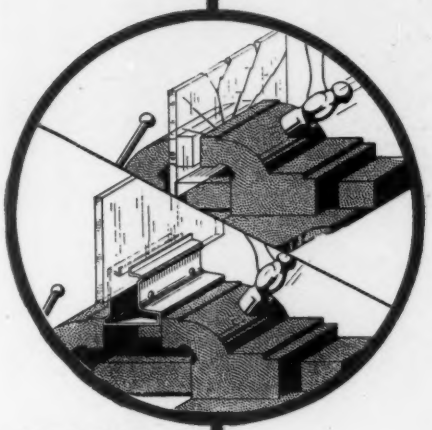
A typical Zouri store front installation

Zouri Drawn Metals Company

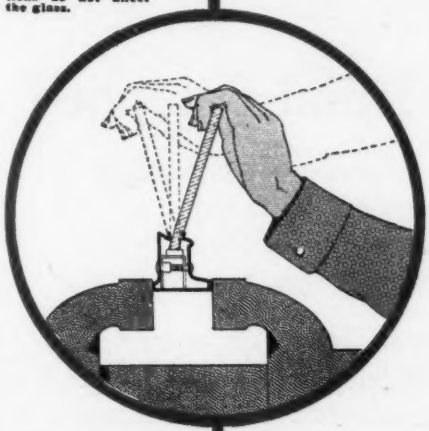
General Offices and Factory

1808 EAST END AVENUE CHICAGO HEIGHTS, ILLINOIS

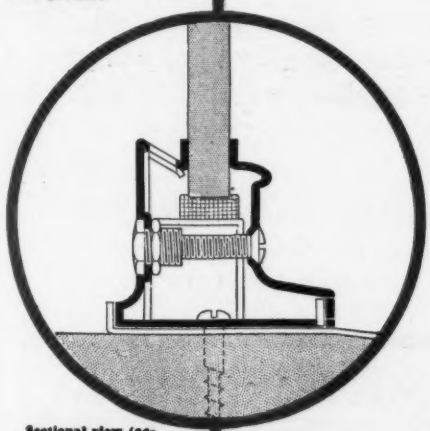
Kawneer
SOLID COPPER
STORE FRONTS



Glass held in a rigid vise is easily shattered by a slight blow. But when held in the resilient, spring grip of Kawneer Store Front Construction, vibrations do not affect the glass.



Because of the resilient grip, glass set in Kawneer Construction is free to rock on its own base when bowed under wind pressure.



Sectional view (actual size) of Kawneer Resilient Sash showing how rugged strength is combined with spring-like grip.

These tests show the essentials of a correct plate glass setting

Plate glass vibrates. It also bends.

Strike your knuckle against a large plate of glass and you will hear it vibrate. Watch it on a windy day and you can easily see the glass bend under wind pressure.

Plate glass is brittle. When it is held in a tight, rigid grip, vibrations from street cars, busses, etc. and bending under wind pressure frequently cause breakage.

Kawneer Resilient Store Front Construction holds glass between two spring faces so that the vibration waves pass out thru the edges of the glass in a natural way. This spring-like resiliency also permits the glass to rock on its base when bent under wind pressure, eliminating the danger of breakage.

This feature of resiliency has been proven successful in more than 260,000 Kawneer Store Fronts. You will find them on most business streets.

More than 60 Branch Offices and sales connections are prepared to give prompt service on architects requirements. Catalog and standard details sent promptly upon request.

THE Kawneer COMPANY
NILES MICHIGAN

Architect,
F. L. PACKARD,
Columbus,
Ohio

The Mansion of the Governor of Ohio, now occupied by Governor A. V. Donahey
A number 200 Ruud Multi-Coil Storage System connected to a 150 gallon galvanized tank assures a constant supply of ever-ready hot water.

Fifteen Governors' Homes are Ruud-Equipped

This is the Ruud Architect's Specification Folder. It fits your files as conveniently as its contents suit your plans. All data necessary to the specification of Ruud Gas Water Heaters is here in compact and workable form. Write for your copy.

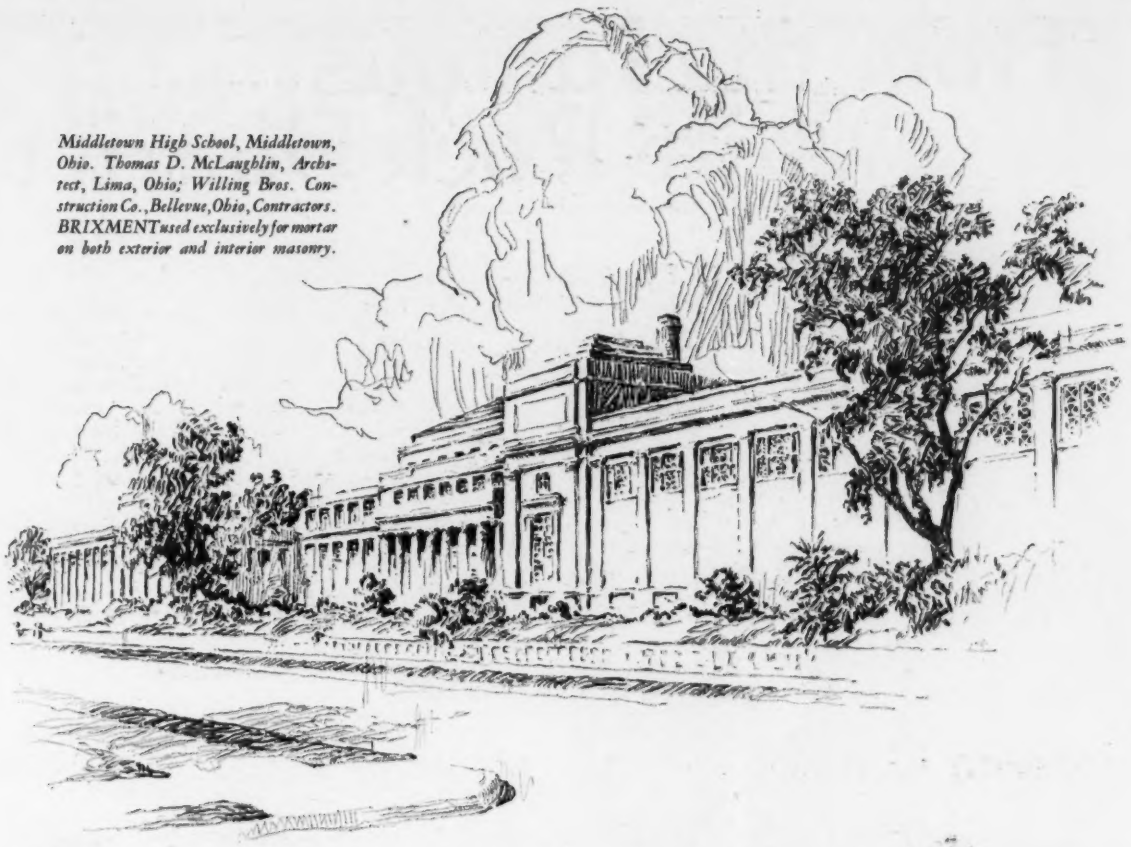
THE Perfect Hot Water Service that Ruud Automatic Gas Water Heaters are providing in many Governors' residences is indicative of the hot water supply assured your clients when you specify RUUD.

In fifteen Governors' homes Ruud Automatic Gas Water Heaters furnish steaming, sizzling hot water —at the turn of a faucet—always hot—always enough.

You can specify RUUD for buildings of every size—large or small. In homes, hospitals, factories, hotels, clubs—wherever an abundant supply of hot water is desired, RUUD fills the need—automatically and inexpensively.

RUUD MANUFACTURING COMPANY
PITTSBURGH, PENNA
BRANCHES IN ALL LARGE CITIES

RUUD AUTOMATIC GAS WATER HEATERS



Middletown High School, Middletown, Ohio. Thomas D. McLaughlin, Architect, Lima, Ohio; Willing Bros. Construction Co., Bellevue, Ohio, Contractors. BRIXMENT used exclusively for mortar on both exterior and interior masonry.

The architect prescribed it, the contractor preferred it, the dealer pushed it

THIS was the condition, as applied to BRIXMENT, that prevailed when the final plans of the Middletown (Ohio) High School were completed. A similar condition exists wherever the unusual advantages of this standard mortar material are known. And why?

Naturally the architect is interested in any justifiable economy that can be effected on behalf of his clients; but he is even more concerned about those qualities that will insure the permanence and architectural correctness of his work. All these essentials he finds in BRIXMENT through exhaustive tests and the results of large-volume use.

To the contractor, especially today when he is confronted by excessive costs in other phases of his work, economy is a vital factor. In BRIXMENT he has discovered exceptional economies in time, labor, material and money.

It is to the dealer's interest to sell a product for which, because of certain exclusive advantages, there is a continuous and growing demand. The almost phenomenal increase in the use of BRIXMENT in foremost construction work throughout the country is tangible evidence of its complete fulfillment of the highest standards of practice—structural, architectural, economical.

No lime. No slaking. Can be used immediately after mixing (one part BRIXMENT; three parts sand).

Write for descriptive booklet and list of well-known buildings in which BRIXMENT has been used exclusively for mortar.

LOUISVILLE CEMENT COMPANY, *Incorporated*, LOUISVILLE, KENTUCKY

BRIXMENT ~ *for Perfect Mortar*

From the Famous White Rock District

TIGER FINISH comes from the famous White Rock District of Ohio where the lime rock deposit has certain natural physical qualities unequaled anywhere else in the world for making finishing hydrate. Nowhere else is lime made so plastic, so white, so ideal for finish work.

See Sweet's for full particulars about using TIGER FINISH—the lime which *"Spreads like warm butter."*

The Kelley Island Lime & Transport Co.
World's Largest Producer of Lime
Leader-News Building
CLEVELAND

Clyde Court Apartments
Miami, Florida

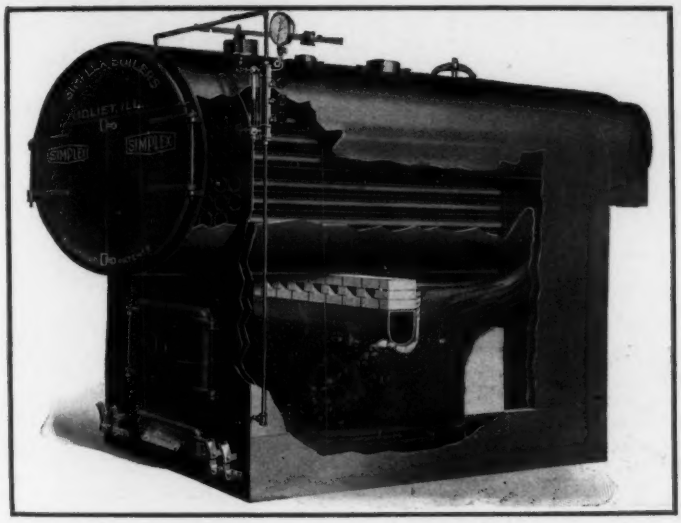
August Geiger
Architect

St. John Construction Company
General Contractors

John B. Orr
Plastering Contractor

TIGER FINISH supplied by
E. I. Schilling Co.

SIMPLEX BOILERS



A heating boiler of the latest approved type embodying utmost simplicity of design and construction with outstanding advantages in efficiency economy and convenience

Simplex Smokeless Steel Heating Boilers combine both fire box and double return tubular types into one. Built of extra heavy flange steel according to A. S. M. E. code; electric arc welded. Large heating surface and flue area, long fire and gas travel. Complete wall of water, with absolutely free circulation. Come all in one piece (except base)—easily and quickly set up without rivets or brick work to leak air and spoil fire control. Built in all sizes for *steam or hot water*. Burn any kind of coal smokelessly; especially efficient with oil; also burn gas or wood. Save 25% to 40% fuel. Compact and economical of floor space. All flues cleaned from the front; smoke connection in rear. Accurately rated, and guaranteed—known wherever used for the ease with which they maintain required temperature in all weathers.

Simplex Water Heating Garbage Burners afford the same advantages in design, construction and efficiency.

For full description, illustrations, drawings and specifications, write our general sales offices.

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SIMPLEX SMOKELESS STEEL HEATING BOILERS

STEDMAN
as used in the
Hotel Sinton
Cincinnati, Ohio

It looks like marble, feels like velvet, wears like iron

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STEDMAN
Naturized Reinforced Rubber
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Baylor Hospital, Dallas, Texas
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Biltmore Hotel, Providence, R. I.
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Many of the most exclusive in the country

SCHOOLS AND COLLEGES
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STORES
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Good Buildings Deserve Good Flooring

FOR the same reason that Stedman Naturized Flooring has been judged almost indispensable to really modern hotel or hospital buildings, it is excellent for any modern building—banks, clubs, department stores.

Absolutely silent—it absorbs other noises. Sanitary, hard to soil and easy to keep clean. Won't cut, dent, crack or break. Won't stain; impervious to the common flooring enemies. Pleasant to walk on; gives a firm resilient footing.

To say that Stedman can always take the place of marble, would be a misstatement. But to say that marble is always better than Stedman, would be even more untrue. When you want a *combination of the best qualities of marble and rubber*—specify Stedman Naturized Flooring.

Stedman Naturized Flooring is rubber, reinforced and held together with an infinite cobweb of minute gossamer cotton fibres, vulcanized under terrific hydraulic pressure. Made in marble, granite and tapestry effects—in tiles, square and rectangular, in long runners—browns, reds, grays, black—in all the formal splendor of a classic floor, or in an intimate blend of cozy warm mixtures in Nature's own colorings.

Let us send you complete data and samples. To facilitate architectural specification, we are advertising this flooring directly to home owners, hotel operators, bankers, hospital managements, school boards, and superintendents

STEDMAN PRODUCTS COMPANY

Manufacturers of Reinforced Rubber Flooring, Sanitary Base, Wainscoting, Walls, Rugs, Table Tops, Shower Bath Mats, and other reinforced rubber surfacings

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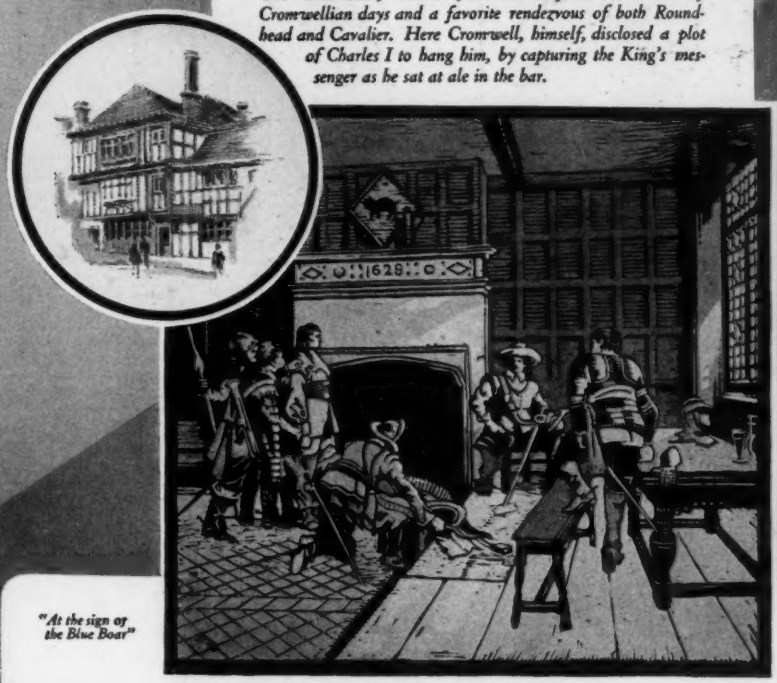

"At the sign of the Blue Boar"

From a painting by E. Croft, R.A.

"THE spurred boots of Cromwell's Roundheads rang lustily upon the Blue Boar's' time-worn tiles." Sturdy indeed must have been the floors of these ancient hostelries to withstand the continued traffic of men at arms. The inn-keeper of the 17th Century chose his floors, if choice there was, for their durability. Decorative effect and comfort played but small part in hotel architecture of that period.

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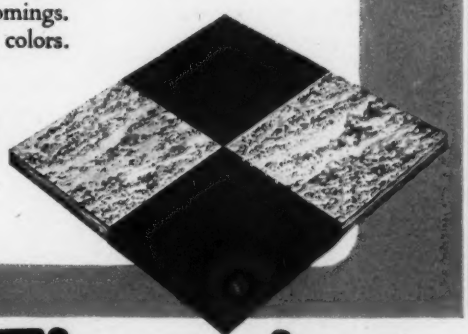

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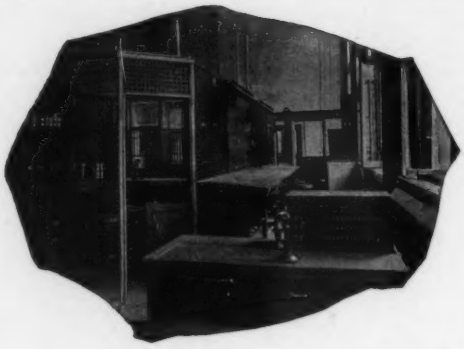

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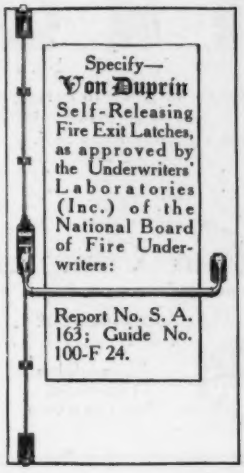
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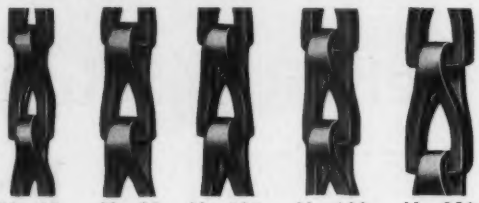

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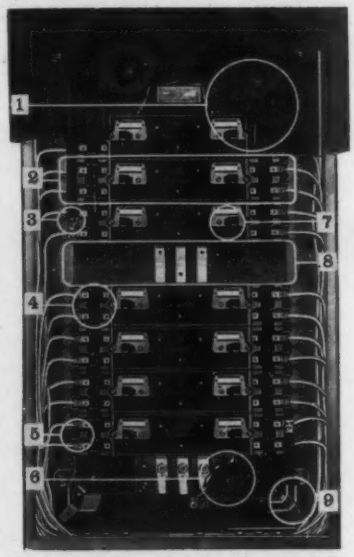

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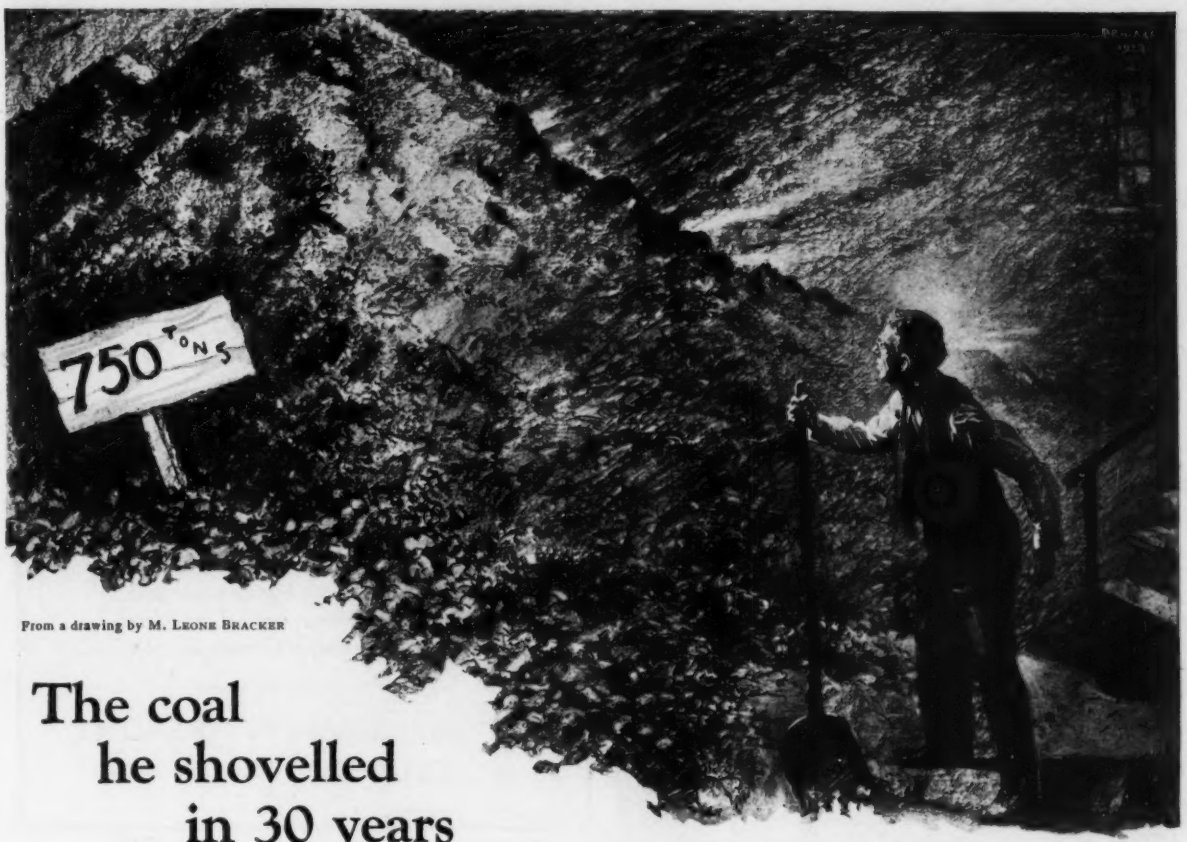

From a drawing by M. LEONE BRACKER

The coal he shovelled in 30 years

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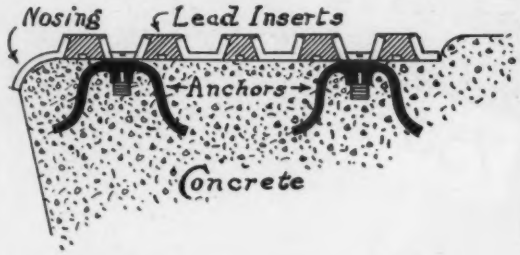

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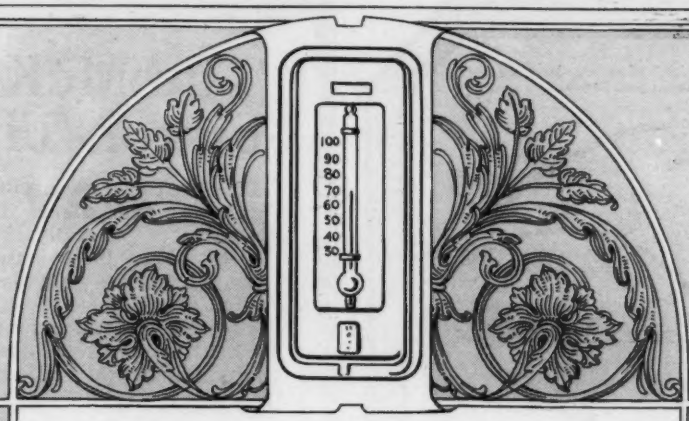

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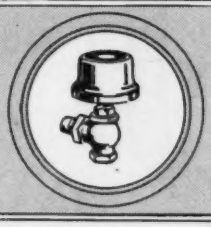

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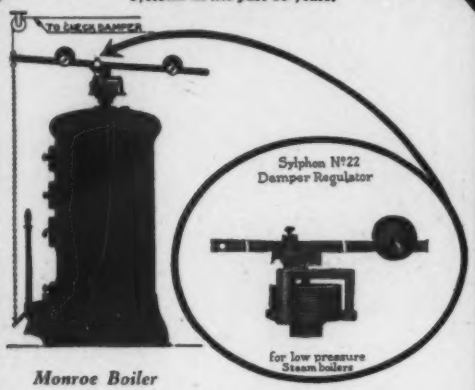

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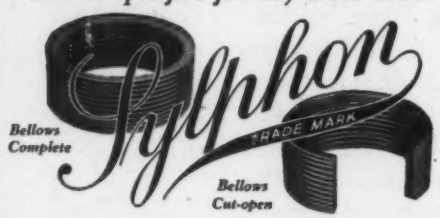

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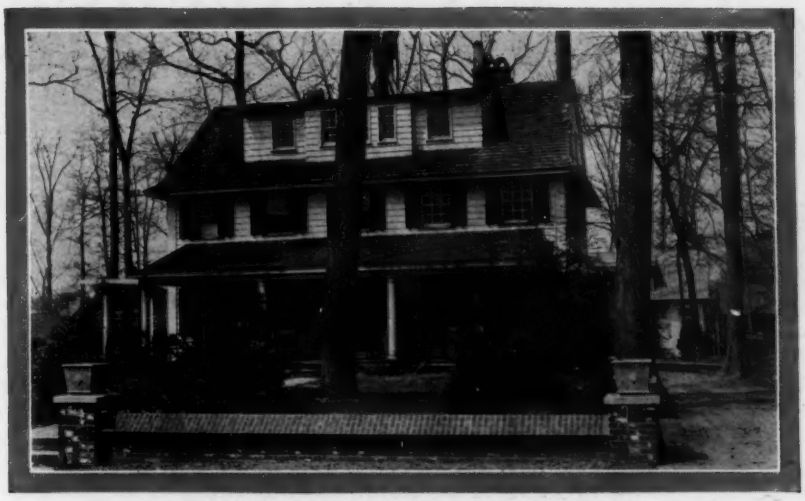

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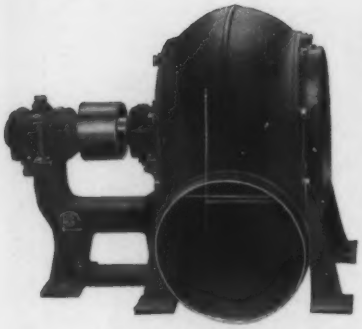

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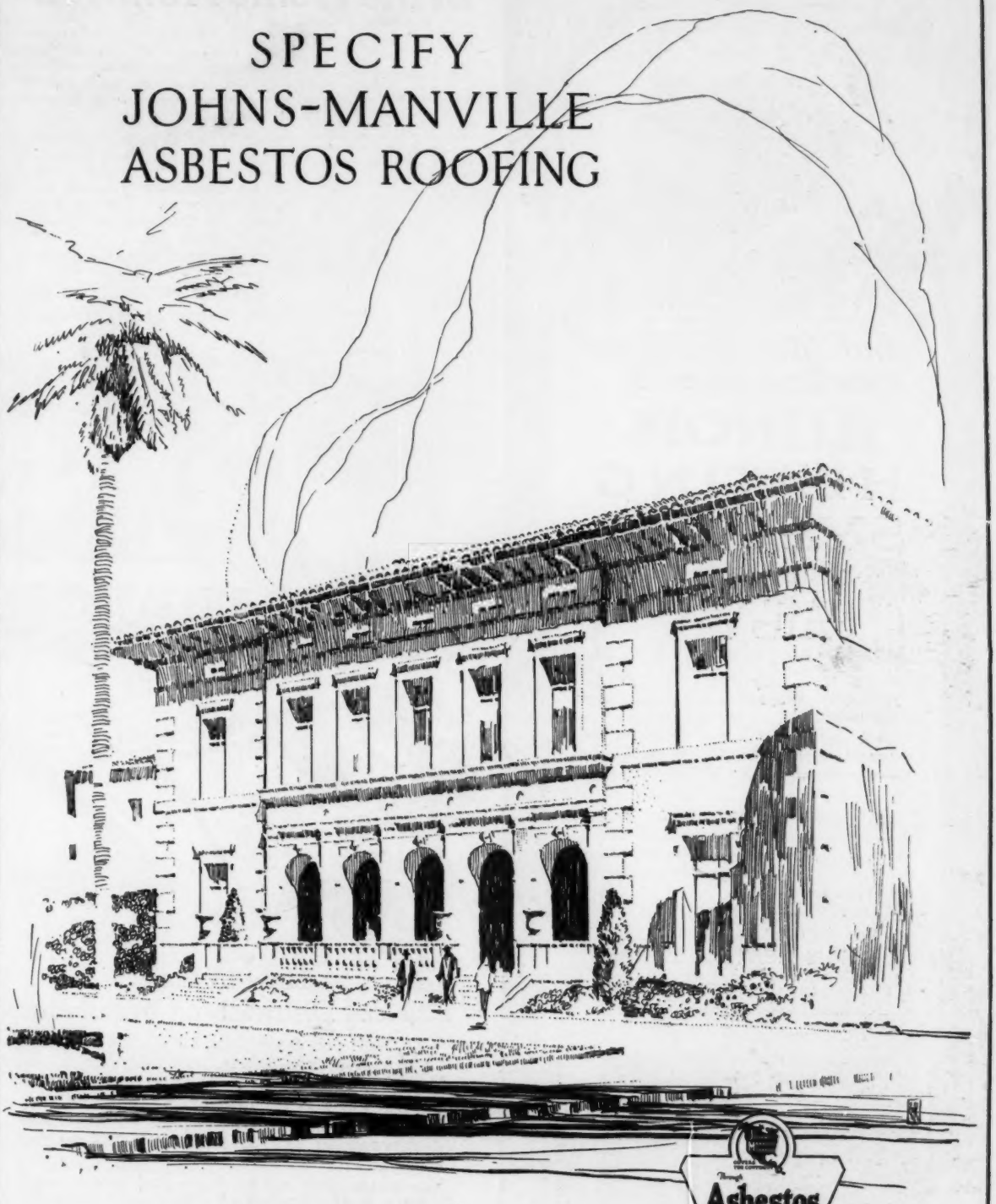

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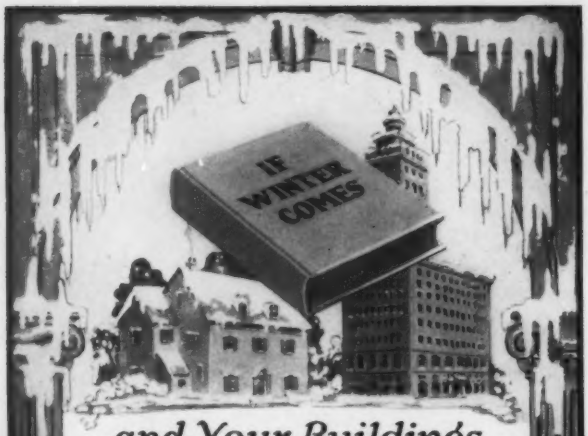


and Your Buildings are Equipped with

ILLINOIS HEATING SYSTEMS

All's Well

Illinois Vapor Systems are positive and rapid in circulation, and the temperature of each room is within easy control of the occupant, as only a half turn of the Supply Valve is required from full steam to shut off.

With these desirable results, ***Illinois Systems*** combine some features which effect an exclusive fuel economy—Our Bulletin No. 21 describes this apparatus. Sent upon request.

To specify an
ILLINOIS HEATING SYSTEM
is to give your client a Guarantee Policy on satisfaction and fuel economy.

GIFFORD PRODUCTS

ILLINOIS ENGINEERING COMPANY
INCORPORATED 1900
CHICAGO
REPRESENTATIVES IN 26 CITIES

In the Home Admired—

Below is shown the convenient Kernerator hopper door, through which all waste matter is dropped to the brick combustion chamber in the basement. Dries the matter by forced draft, allowing quick combustion when lighted.

THE KERNERATOR, because it is the time-tried, accepted solution to the problem of garbage and waste disposal, is becoming more and more the standard equipment of better-class homes.

Built in the chimney, it handles *all* household refuse, reducing everything combustible to ashes and sterilizing all non-combustibles for easy removal with the ashes. Costs nothing to operate, as the waste itself is all the fuel required.

Full details on Pages 2340-41, Sweet's (1923), or write

KERNER INCINERATOR CO.
1015 Chestnut St., Milwaukee, Wis.

KERNERATOR
Built-in-the-Chimney
Reg. U. S. Patent Office

How to Plan Efficient Dishwashing Installations

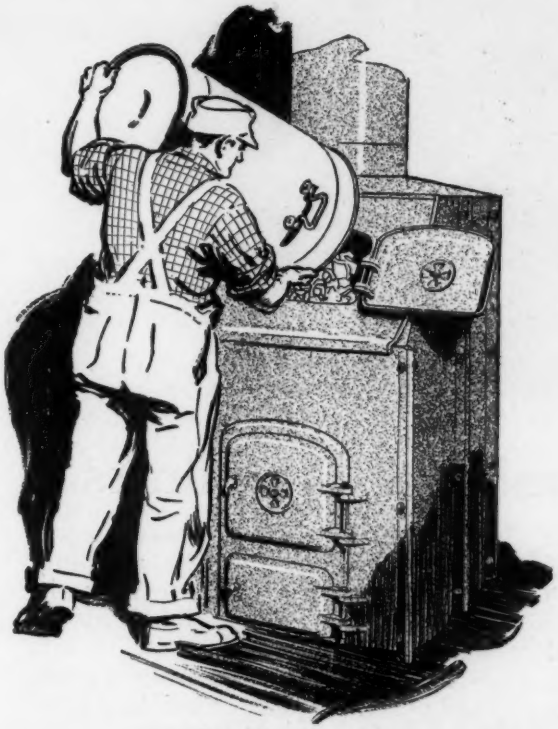
WHEN you draw plans for kitchens in clubs, restaurants, hotels, hospitals, institutions, these booklets will come in right handily. They provide not only for finer-looking kitchens but—more important—more efficient kitchens, with dishwashing equipment that is 100 per cent economical.

Autosan equipment will cut dishwashing payrolls in half, breakage costs 60 per cent, will quickly pay its own cost in the saving it effects, and will endure for years.

Consider Autosan equipment well before you draw kitchen plans. Let us first send these four booklets for your perusal.

Colt's Patent Fire Arms Mfg. Co.,
W-110 Hartford, Conn., U.S.A. AS-110

AUTOSAN
TRADE MARK REGISTERED U.S. PAT. OFFICE
DISH AND SILVER CLEANING MACHINE



Seven Bushels to 300 Tons of Garbage Per Day

can be disposed of in any hotel, restaurant, hospital, apartment, residence or industrial plant equipped with a Goder Incinerator of the right size and type. Installation is possible whether building is old, new or in plan.

Malodors are completely eliminated. Storage of garbage is unnecessary. Operation costs not only low but almost if not entirely offset by use as hot water plant. Soundness of material and construction insures against breakdown.

Goder Service will without obligation advise with you, on exactly the best adaptation of the Goder Incinerator principle to the specific requirements of your client.

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Hupp Motor Car Co., Detroit, Mich.
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Louisville Bedding Co., Louisville, Ky. 3 installations
Reyland Apartments, Chicago
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WASTE DISPOSAL
GODER
FURNACES

The Garbage Hog

The illustration below is the new standardized type of Goder Incinerator intended for small and medium sized installations where the requirements for waste disposal range only from 2 to 20 cans per day. It is shipped knocked down but in such form that it can be assembled like any ordinary stove or furnace and easily set up by local furnace men. Flue connection with chimney.

Ivanhoe Masonic Temple, Kansas City, Mo.
Architects, Smith Rea and Lovett.

The Shining Symbol of Cleanliness

SYMBOLS show themselves in many different parts of beautiful Ivanhoe Temple. Most of them are Masonic, but in the kitchen, Monel Metal appears as the symbol of cleanliness.

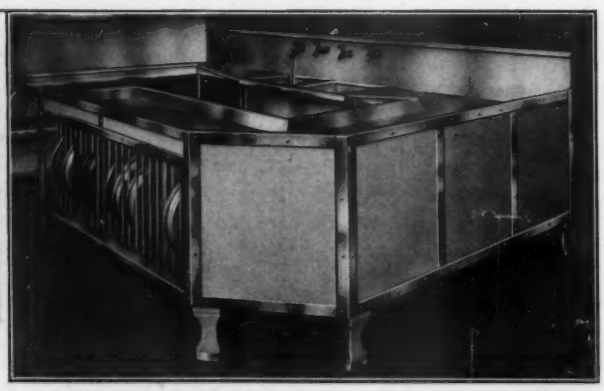
Monel Metal is inherently clean. It never rusts—it resists corrosion—a little soap and water quickly restore its original brightness. The strength of Monel Metal is noteworthy. It outlives other metals under hard usage. The resulting long life and the ease with which it is kept clean make Monel Metal ideal for kitchen equipment.

Monel Metal serves many varied and useful purposes in building construction and equipment. You should know more about it. Write for literature showing typical installations.

The INTERNATIONAL NICKEL COMPANY, 67 Wall St., New York City

Producers also of Malleable Nickel in Sheet, Rod and other commercial forms.

Monel Metal steam tables, dish warmers and tray slides. All equipment made and installed by **CHARLES ZEHN & SON MANUFACTURING CO.,** *Kansas City, Mo.*



Monel Metal dish counter, manufactured by **CHARLES ZEHN & SON MANUFACTURING CO.,** *Kansas City, Mo.*

INCo Monel metal

Van Equipment—

for the preparation and serving of food

The value set on efficient and dependable equipment is nowhere more evident than in the kitchen and dining room.

In the preparation and serving of food, lasting finish, combined with enduring quality and usefulness has built for Van Equipment a reputation of superiority.

This reputation has been maintained over a period of 75 years. During that time we have had occasion to solve nearly every problem that has to do with kitchen and dining room installation.

Our engineers and food service experts are ready at all times to look into your needs and advise you.

Nothing too large or too small for Van to handle.

The John Van Range Co.
EQUIPMENT FOR THE PREPARATION AND SERVING OF FOOD
Cincinnati

Detroit Omaha Chicago New Orleans Cleveland

"That Enduring Quality"

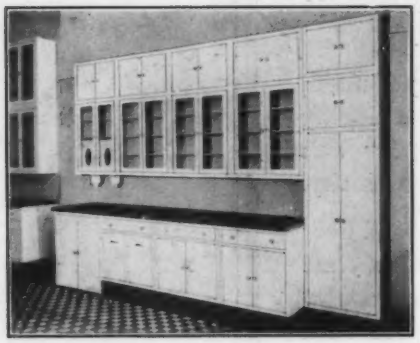
THE BROWN HOTEL
Louisville, Ky.

Preston J. Bradshaw, Architect

Culinary appliances supplied by Van.

The WHITE HOUSE *Line*

SECTIONAL UNIT STEEL DRESSERS



One of the installations in our Showroom showing the use of WHITE HOUSE Steel Units instead of built-in wooden cupboards

A SERVICE TO ARCHITECTS

WHITE HOUSE Sectional Steel Units are made in so many sizes that we cannot show all of them in a catalogue, nor can we explain all of their uses. Therefore, we maintain a drafting room that makes a specialty of preparing sketches and estimates of WHITE HOUSE Units to fill given spaces and to meet given requirements.

WHITE HOUSE Units are furnished complete, ready for installation; no hardware, glazing, or painting necessary. Let us save you time, worry, and expense! Give us an opportunity to show you just what we can do to help you!

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Established 1840

129 West 44th Street, New York City

Interior and exterior views—Wesley Hospital, Wichita, Kans. Architects, Richards, McCarty & Bulford, Wichita. Interior shows nurse about to deposit laundry through porthole type door of Pfaudler Laundry Chute.

SIMPLIFYING THE LAUNDRY DISPOSAL PROBLEM

Specifying the Pfaudler Laundry Chute for hospitals or hotels is just as automatic a procedure for some architects as the specifying of the mail chute. Include one in your next set of plans.

—also mail coupon for new brochure

THE PFAUDLER CO.

Makers of the Glass Lined Steel Laundry Chute

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GLASS LINED LAUNDRY CHUTE

"Increases the Sales Value of Apartments"

That's what the Queensboro Corporation says of the

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COMPACT CABINET GAS RANGE

Put this range into the kitchens of *your* homes and your prospective buyers will select that home out of hundreds.

For the Vulcan Smoothtop has every feature every other gas range has *plus* many other distinctive improvements which make cooking easier, quicker and pleasanter.

Write for Booklet

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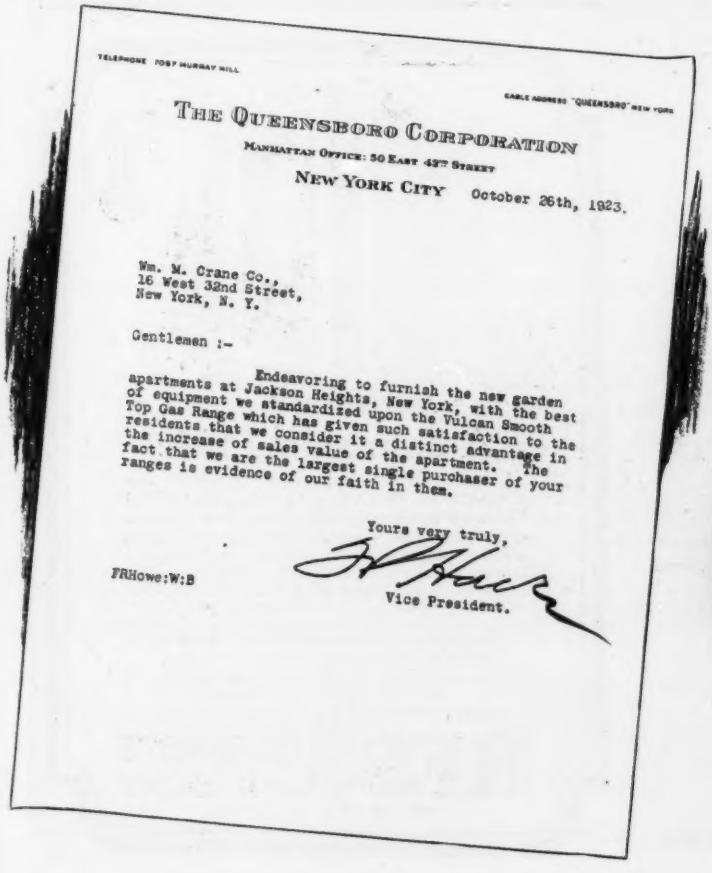
Gas Range Headquarters
18-20 East 41st St., New York

In the Chateau Apartments at Jackson Heights, Andrew J. Thomas, the well-known apartment house architect, achieved his ideal of open planning. His arrangement of individual buildings having only two apartments on a floor, provides a maximum of sunshine, a variety of exposures and corner rooms, like a suburban house.



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Yours very truly,

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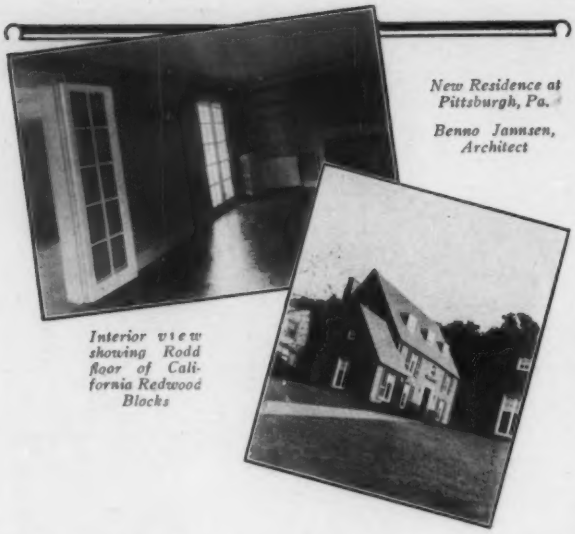
One of Five Sizes



New Residence at Pittsburgh, Pa.

Benno Jannsen, Architect

Interior view showing Rodd floor of California Redwood Blocks

For Fine Residences

Rodd Floors of California Redwood Blocks

BEAUTY, long wear, resilience and quietness, which have earned Redwood block floors preference for public rooms and offices, give a restful dignity to the floors of fine residences.

Rodd Floors of California Redwood Blocks are light in color. They can be sanded smooth and given a wax or varnish finish. They stay flat—no shrinking or swelling. They are odorless and permeated during the growth of the tree with a *natural* preservative which protects them against all forms of fungus rot and decay and repels insects.

These floors give a tiled effect—equally desirable for large floor spaces, for narrow or small rooms where long, parallel lines give undesirable emphasis to room dimensions.

Rodd specifications for floors to meet all conditions—for foundry, factory, store, office or home, for replacing old plank or concrete floors—gladly supplied to Architects and Builders.

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Eastern Contract Engineers for

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Manufactured by

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The Largest Manufacturers and Distributors of California Redwood

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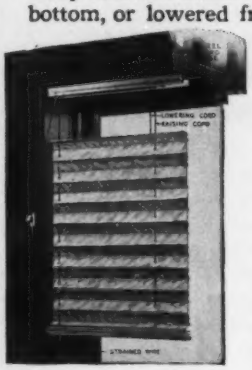
They fold like a fan. Can be raised from the bottom, or lowered from the top. No rattle or fluttering even when the wind blows hard. No springs or rollers to get out of order. No latches to slip, or stick.



Truly decorative—extremely durable. Made of indestructible cloth—thoroughly shrunken and waterproofed. Rain won't hurt them. Easily dry-cleaned. *By far the most economical shade you can buy* considering the many years they last. Experience of thousands of users prove it.

Used in many of the finest buildings throughout America

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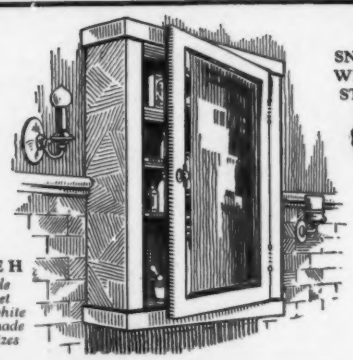

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STYLE H
Outside Cabinet Snow-white Steel, made in 3 Sizes

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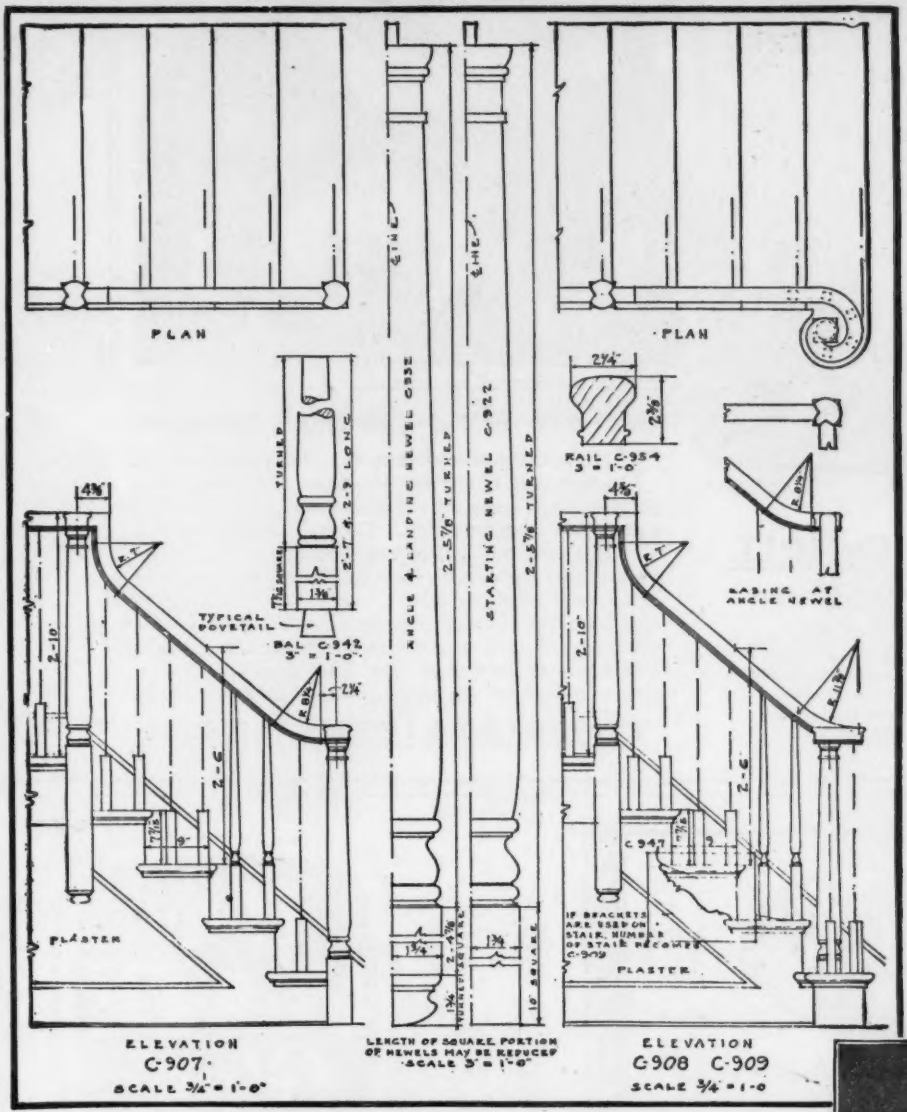
See Our Catalogue in Sweet's—pages 1786-1787

HESS CABINETS and MIRRORS

Snow-White Steel



Stairs C-907

Why Design Special Rails, Volutes, Balusters and Newels—when you can order such as these from stock?

The detail drawings above deserve more than a passing glance. Study them a moment and you'll see how easily you can still put into your stairways the distinctiveness and individuality that every architect prizes so highly.

And the time you can conserve!

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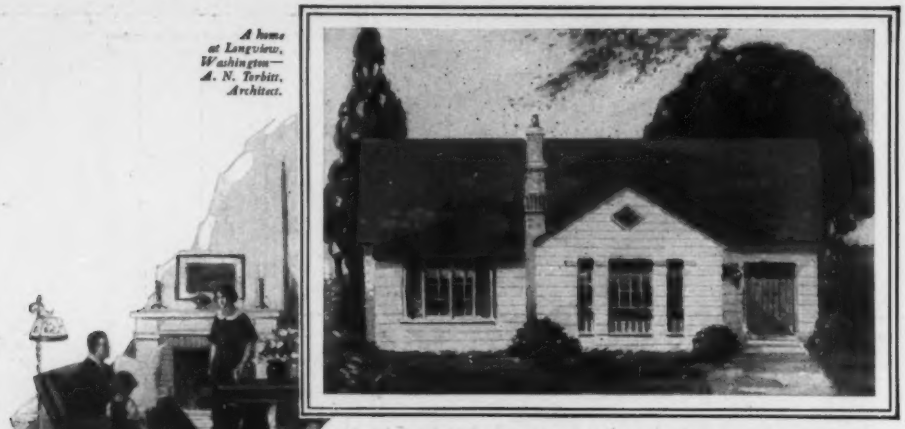
Curtis Woodwork is sold by retail lumbermen east of the Rockies. Make sure the woodwork you buy bears this trade-mark—

1868 CURTIS

The makers of Curtis Woodwork are proud to identify their products by this mark.

A home at Longview, Washington— A. N. Torbitt, Architect.



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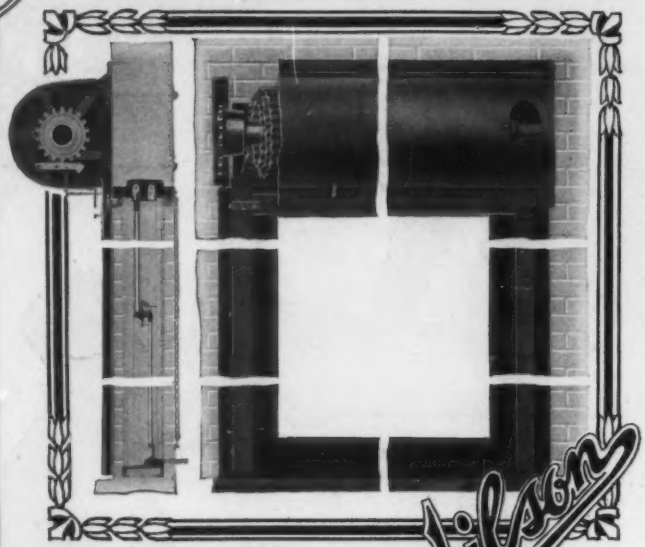

Wilson Gravity Closing Shutter. Note chain which allows of operation from inside of building.

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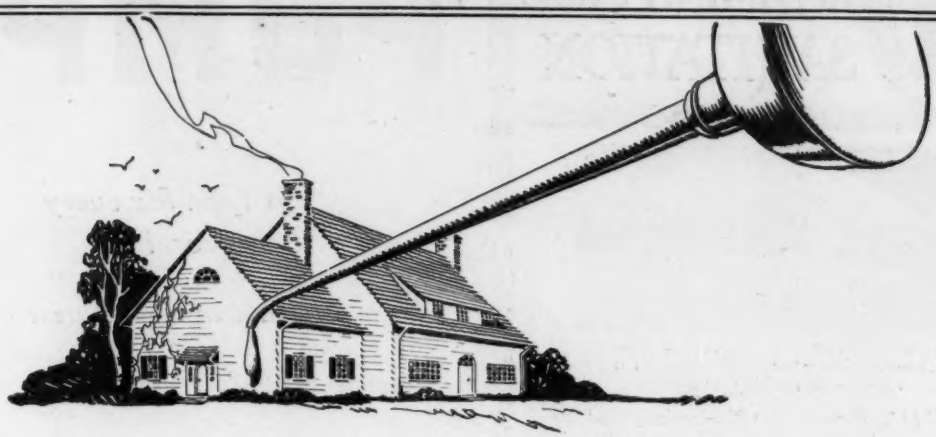
If a house could be oiled——



If a house could be oiled—as shoes are oiled—whenever needed—it would always be weather-proof.

Oil will protect the wood against decay as long as it stays in the wood, but without protection, it will not stay long.

Zinc in paint affords the greatest protection to the oil which covers the painted surface.

That is why all reliable brands of scientifically prepared paints contain zinc. That is why the United States Government insists on a high percentage of zinc in its paints.

For the greatest paint protection, architects can now specify paint mixed with

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which is our own pure Zinc Oxide ground in refined linseed oil. It is ground according to our formula by the following licensed manufacturers, any of whom will send booklet of mixing formulas and full information on request.

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New Jersey zinc

The world's standard for zinc products

New Jersey zinc THE NEW JERSEY ZINC COMPANY New Jersey zinc

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The W & T Process of Chlorination, used by over 200 Pools, is the least expensive and most efficient method of Swimming Pool Sterilization.

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Sold by All Plumbers and Steamfitters

GORTON QUARTER TURN VALVE

A Quarter Turn of the Wrist Opens or Closes this Valve

A Packing Lock Stem, with Ground Shoulder seating in bonnet, insures a Tight Valve that Stays Tight.

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The Pipe Basis for Modern Building

ANY survey of the architecture of the South will show the state of Georgia and the city of Atlanta taking high rank. Manufacturers whose high quality products are selected for structures of the superior character of those illustrated have a justifiable pride in the building achievements of this city and state.

The buildings illustrated are taken from Bulletin No. 25 "NATIONAL" Pipe in Large Buildings. The new edition of this publication, revised and enlarged, will be sent upon request.

NATIONAL TUBE COMPANY, PITTSBURGH, PA.

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Through Earthquake and Fire!

IN 1919 the Japanese Government appointed a commision to study European and American building methods. The commission was so favorably impressed with American buildings, that a New York firm was invited to organize the Geo. A. Fuller Co. of the Orient, Ltd., their first work being the erection, in Tokio, of the two giant structures illustrated above.

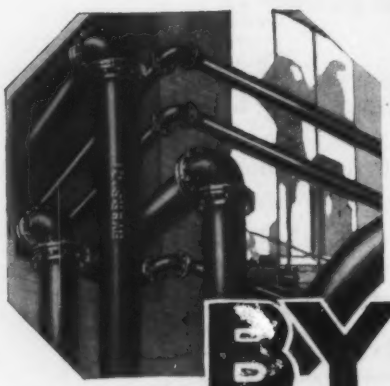
These buildings were nearing completion when the disastrous earthquake and fire occurred. American building methods scored their crowning triumph when these structures emerged with amazingly small damage from the most terrible catastrophe in recorded history.

The larger of these buildings, the Marunouchi Building, now stands amidst devastation and ruin, a modern office building of gigantic proportions, a typical American steel frame structure.

The other edifice is the mammoth headquarters of the Nippon Yusen Kaisha. Both of these buildings contain all modern conveniences and safeguards to life and property, such as passenger elevators, electric light, plumbing, heating and other pipe systems. These latter include a number of services found only in the best equipped American business buildings, namely:

Heating System	*Byers Pipe*
Cold Water Supply Lines	*Byers Pipe*
Hot Water Supply Lines .	*Byers Pipe*
Fire Lines	*Byers Pipe*
Sprinkler System	*Byers Pipe*
Refrigeration System .	*Byers Pipe*
Drinking Water Lines and Other Services . .	*Byers Pipe*
Vacuum Sweeper Lines.	*Byers Pipe*

It will be noted that, with due recognition of its surpassing anti-corrosion properties, Byers pipe was chosen for all but one of the above services in both buildings.



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EST. READING 1848

"'Reading' on Every Length"

Pipe corrosion is no respecter of persons or property

CORROSION is but another name for rust. In every hotel, home, office building and factory there are from hundreds to many thousands of feet of pipe, and along every foot of every pipe, corrosion is seeking for a weak spot—some flaw that will give it a foothold. And once corrosion gets a foothold, a leaky pipe is only a matter of time.

Tonight, somewhere, the gaily decorated ceiling of some hotel dining room may suddenly treat the comfortable diners to a shower bath—or your own dining room at home may be the scene of some such occurrence. Tomorrow morning you may find your office or your factory has sustained water damage from leaking pipes.

A pipe leak heretofore may have meant only a plumber's bill to you. Next time the damage may be more serious. You cannot *stop* pipe corrosion once started, but you *can* guard against it by the use of Reading Genuine Wrought Iron Pipe. "Reading" offers two to three times the resistance to rust that steel pipe does. "Reading's" life is two to three times as long. Its "per year" cost is one-half to one-third the price of steel.

When you build or remodel or when you replace pipe it is the part of wisdom to specify "Reading"—the pipe that *endures* Write today for "The Ultimate Cost."

READING IRON COMPANY

READING, PA.

World's Largest Manufacturers of Genuine Wrought Iron Pipe

BRANCH OFFICES:

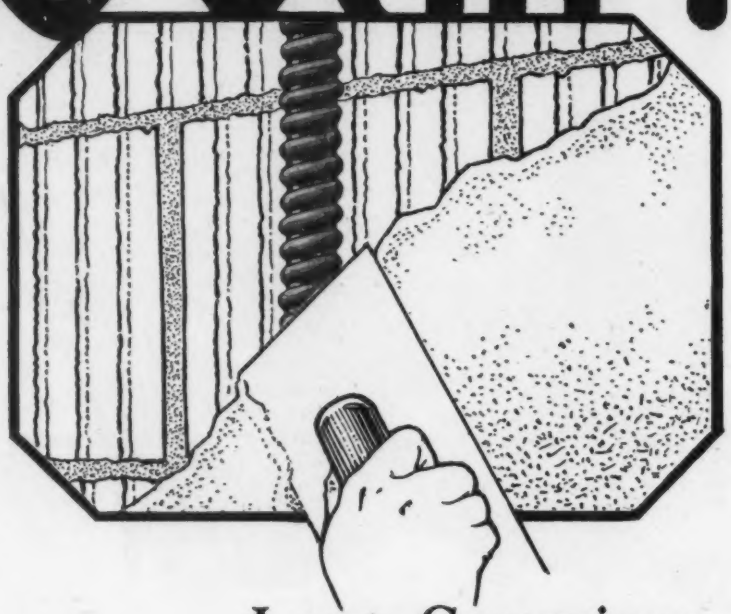
Boston, New York, Philadelphia, Baltimore, Pittsburgh, Cincinnati, Chicago, Los Angeles

READING

GUARANTEED GENUINE

WROUGHT IRON PIPE

Ovalflex



Locate Convenience Outlets—Anywhere

With OVALFLEX, you can now locate convenience outlets anywhere—on inside partitions or outside walls, because:

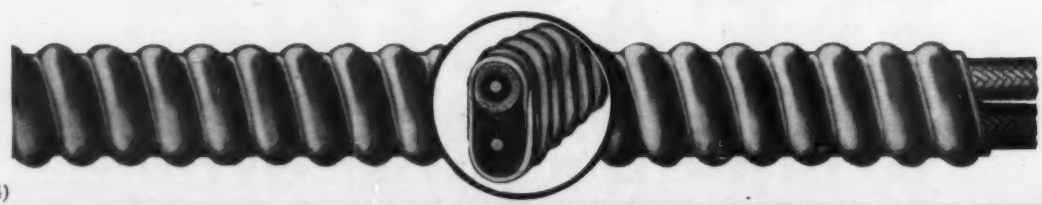
OVALFLEX—an armored cable flat in shape and extremely flexible—can be laid directly on the surface of brick, tile or concrete walls, without cutting or grooving the basic materials, and covered with the usual thickness of plaster.

Send for Sample—FREE

In many other ways OVALFLEX is meeting the requirements of intricate wiring jobs that cannot be accomplished by the ordinary round armored cable.

Our Bulletin No. 800, which describes and illustrates this remarkable product, will be sent on request.

National Metal Molding Company
1404 FULTON BUILDING
PITTSBURGH, PA.



(4)

Bridgeport Plumrite *The Improved* Brass Pipe

REG. U. S. PAT. OFF.

"When Tomorrow Looks Back on Today"

BUILDINGS such as these are illustrative of the architectural development of the century, both in design and construction. They are period landmarks—structures abiding, permanent; not transient or fugitive.

It is fitting that Plumrite Brass Pipe has been chosen to faithfully perform its service down through the years, keeping pace with the imperishable material of the structures themselves long after the minds that conceived them have passed on.

Some of America's finer structures, recently built or now being built under the direction of leading architects, are shown on this page. All have Bridgeport Plumrite Brass Pipe installed.

1—Roosevelt Apartment Hotel, New York
Geo. B. Post and Sons, Architects.

2—Citizens National Bank Bldg., Baltimore
Graham, Anderson, Probst & White, Architects.

3—Park Lexington Building, New York
Warren & Wetmore, Architects.

4—Greenwich Savings Bank, New York
York & Sawyer, Architects.

5—New York Cotton Exchange, New York
Donn Barber, Architect.

6—U. S. Chamber of Commerce Bldg., Washington
Cass Gilbert, Architect

BRIDGEPORT BRASS COMPANY

Pershing Square Building, New York, N. Y.
General Motors Building, Detroit, Mich.

BRIDGEPORT "Bridgeport" CONNECTICUT
TRADE MARK REG. U.S. PAT. OFF.

North American Building, Philadelphia, Pa.
Wrigley Building, Chicago, Ill.

THE MADVAL BIDET

Because of the many advantages it affords for personal cleanliness and health protection, the Bidet is now recognized as a most essential fixture in the modern American bathroom.

The Madval Bidet is a vitreous china fixture—a fixture that embodies all of the sanitary advantages that have characterized Thomas Maddock products for three generations.

Are you recommending this fixture in your plans in order that your clients may benefit by the health protecting advantages that the Bidet provides?

ARCHITECT'S SPECIFICATION: White Vitreous China Flushing Rim Pedestal Bidet Pan; height 15 inches, with Douche and Fixture Shelf. Fitted with N. P. Brass 1¼-inch Pop-up Waste Fixture with China Knob, 1¼-inch O. D. Tailpiece; "Hot" and "Cold" Compression Supply Valves with China Cross-arm Handles and Escutcheons, and Transfer Valve with China Lever Handle and Escutcheon, permitting either "Hot" and "Cold" Supply to Flushing Rim or center Douche; Supply Pipes to floor.

Send for literature describing the use and construction of this fixture.

THOMAS MADDOCK'S SONS CO.

TRENTON, N. J.

PERMANENCY

IN plumbing fixtures permanency is not denoted by a white surface, but by what material is beneath that surface, how conscientiously and with what skill it is made.

"Tepeco" All-Clay Plumbing Fixtures are the highest development of the potter's art. Ware made basically from clay, highly glazed of surface, admittedly has no equal. You will never find indifference to details, skimping of baking processes or laxity in glazing the trade-marked, guaranteed products of this company.

Architects who test by use continue the specification of our goods. They like the absolute assurance that goes with the "Tepeco" trade-mark.

Catalogue R upon request

THE TRENTON POTTERIES COMPANY
Trenton, New Jersey, U. S. A.

NEW YORK BOSTON SAN FRANCISCO

World's Largest Makers of All-Clay Plumbing Fixtures

THE TRENTON POTTERIES COMPANY
TEPECO
TRENTON, N.J. U.S.A.

SPINK-ARMS HOTEL, Indianapolis: William K. Eldridge, Architect; Van Camp Hardware & Iron Co. and August Buschmann & Sons, Inc., Jobbers; B. C. Torelle Co. and Vestal Plumbing Co., Plumbers

KOHLER

And the SPINK-ARMS HOTEL

Noteworthy among the newer hotel and apartment buildings of Indianapolis is the Spink-Arms, a residential hotel embodying the most modern thought in design and equipment.

It is another instance of the selection of Kohler Enameled Plumbing Ware, the installation including 236 "Viceroy" built-in baths and the same number of Kohler lavatories and kitchen sinks.

Thus does the steadily lengthening list of important Kohler installations throughout the country almost daily reaffirm the satisfaction of architects in Kohler quality and distinction of design.

KOHLER

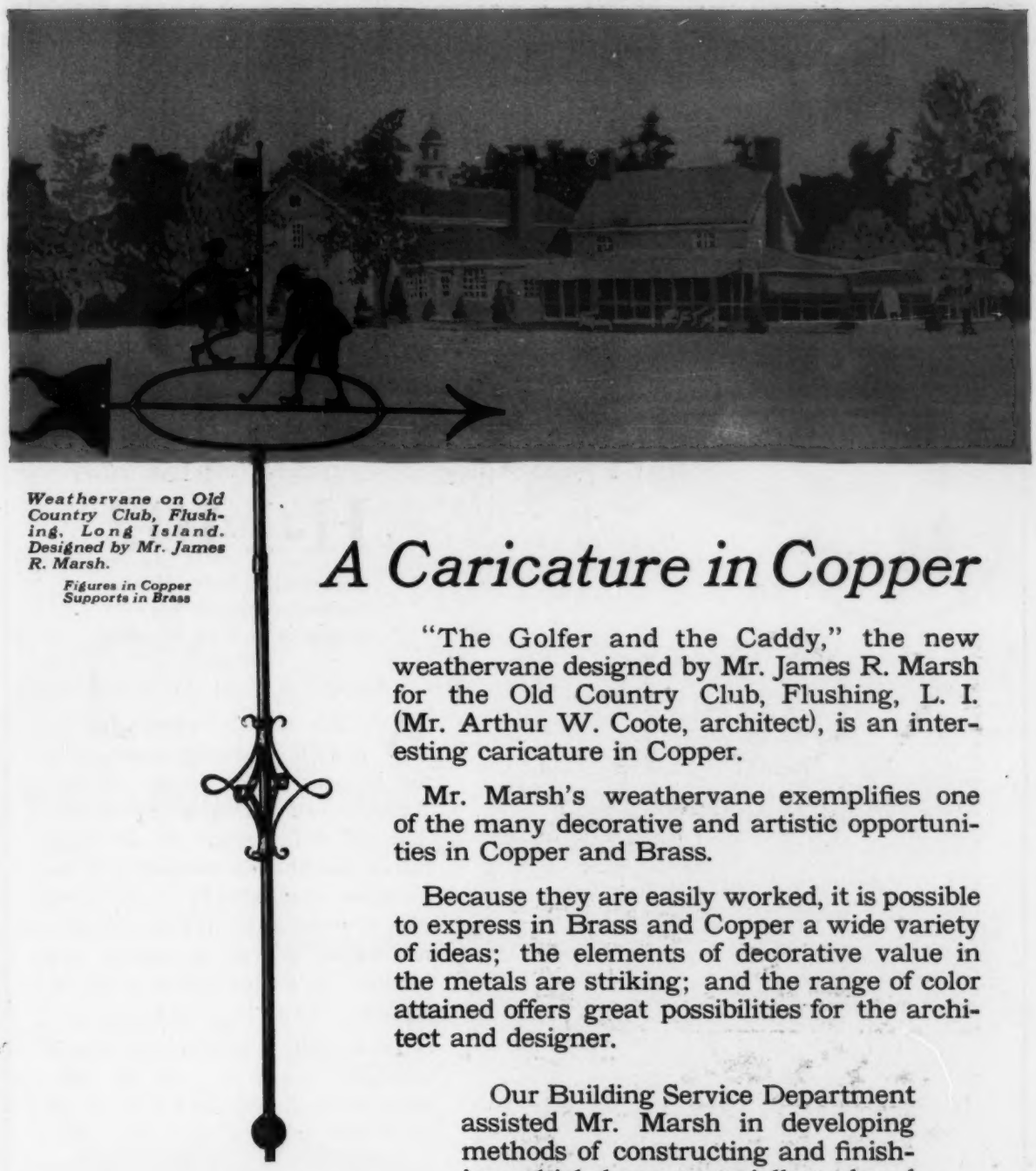
This name, unobtrusively fused into the enamel of every Kohler fixture, is a guaranty of genuineness and of these distinctive Kohler qualities—(1) the beautiful snowy whiteness of the durable enamel; (2) the *uniformity* of that whiteness in every fixture.

KOHLER OF KOHLER

Kohler Co., *Founded 1873*, Kohler, Wisconsin
Shipping Point, Sheboygan, Wisconsin

BRANCHES IN PRINCIPAL CITIES

MANUFACTURERS OF ENAMELED PLUMBING WARE AND KOHLER AUTOMATIC POWER AND LIGHT 110 VOLT D. C.



Weathervane on Old Country Club, Flushing, Long Island. Designed by Mr. James R. Marsh.

Figures in Copper Supports in Brass

A Caricature in Copper

"The Golfer and the Caddy," the new weathervane designed by Mr. James R. Marsh for the Old Country Club, Flushing, L. I. (Mr. Arthur W. Coote, architect), is an interesting caricature in Copper.

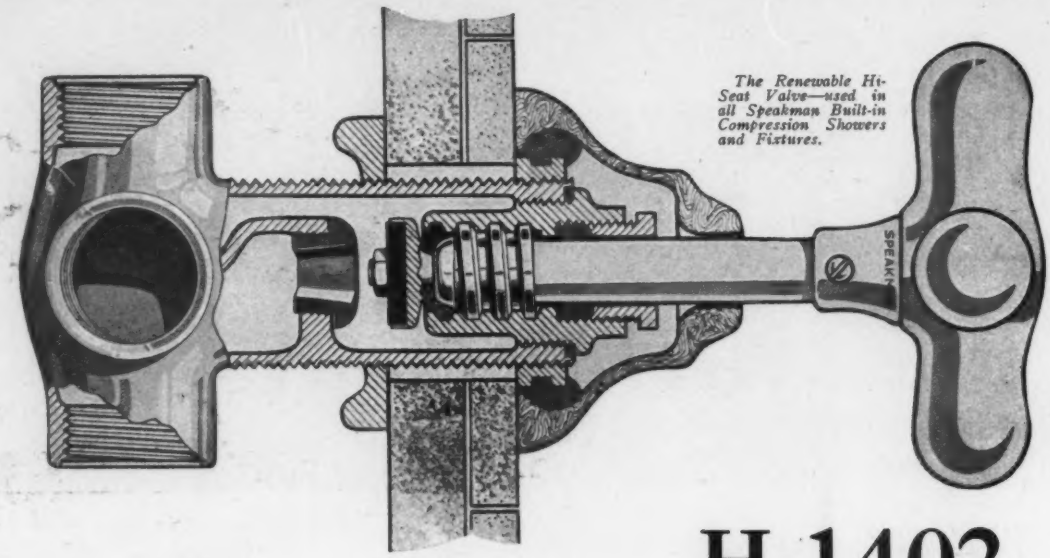
Mr. Marsh's weathervane exemplifies one of the many decorative and artistic opportunities in Copper and Brass.

Because they are easily worked, it is possible to express in Brass and Copper a wide variety of ideas; the elements of decorative value in the metals are striking; and the range of color attained offers great possibilities for the architect and designer.

Our Building Service Department assisted Mr. Marsh in developing methods of constructing and finishing which have materially reduced the cost of his productions in Copper and Brass.

COPPER & BRASS
RESEARCH ASSOCIATION

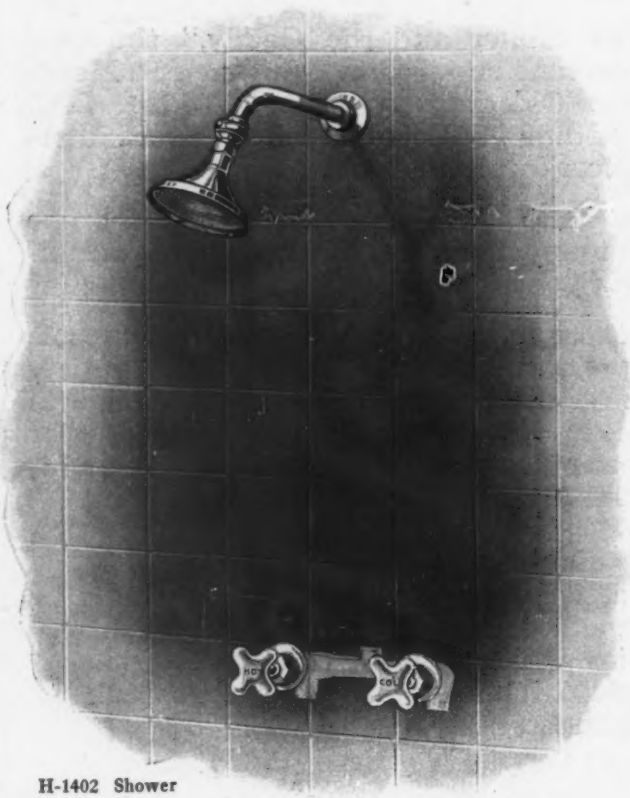
25 Broadway - New York



The Renewable Hi-Seat Valve—used in all Speakman Built-in Compression Showers and Fixtures.

H-1402

Compression Valve Shower designed especially for over a tub, in a stall or open battery



H-1402 Shower

WHEN installed over a tub the H-1402 is usually connected to the by-pass valves of the Deshler Bath Fixture or Dupont Tub Filler. The H-1402 similar to all other Speakman built-in showers and fixtures has Renewable Hi-Seat Valves, also all screwed joints are sweated—no chance to leak no matter how strained or pulled when being installed.

Only carefully matched finest American-made china is used in trimming these showers and fixtures, all of which are described and illustrated in our Catalog H. If you haven't a copy in your files, we'll send one promptly.

SPEAKMAN COMPANY
WILMINGTON, DELAWARE

SPEAKMAN SHOWERS

THE BRUNSWICK-BALKE-COLLENDER CO.
WHALE-BONE-ITE
CLOSET SEATS

NO RE-FINISHING EVER NECESSARY ON

Whale-Bone-Ite
Toilet Seats

See that *heavy* covering. No amount of cleansing or scrubbing will wear through it.

It's not what you pay—it's the value you get for the amount you spend.

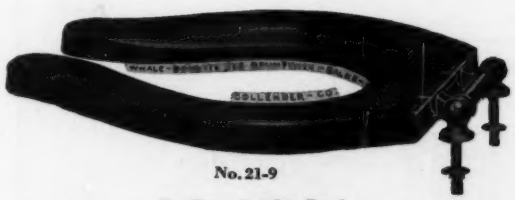
No. 23-9—For Regular Bowls.

Whale-Bone-Ite Provides life-long Sanitary Service at No Cost for Up-keep.

Always looks the Quality Product it is.

Universally ordered by Architects and Engineers who want *The Best*

Types for all standard makes of bowls



No. 21-9
For Extended Lip Bowls.

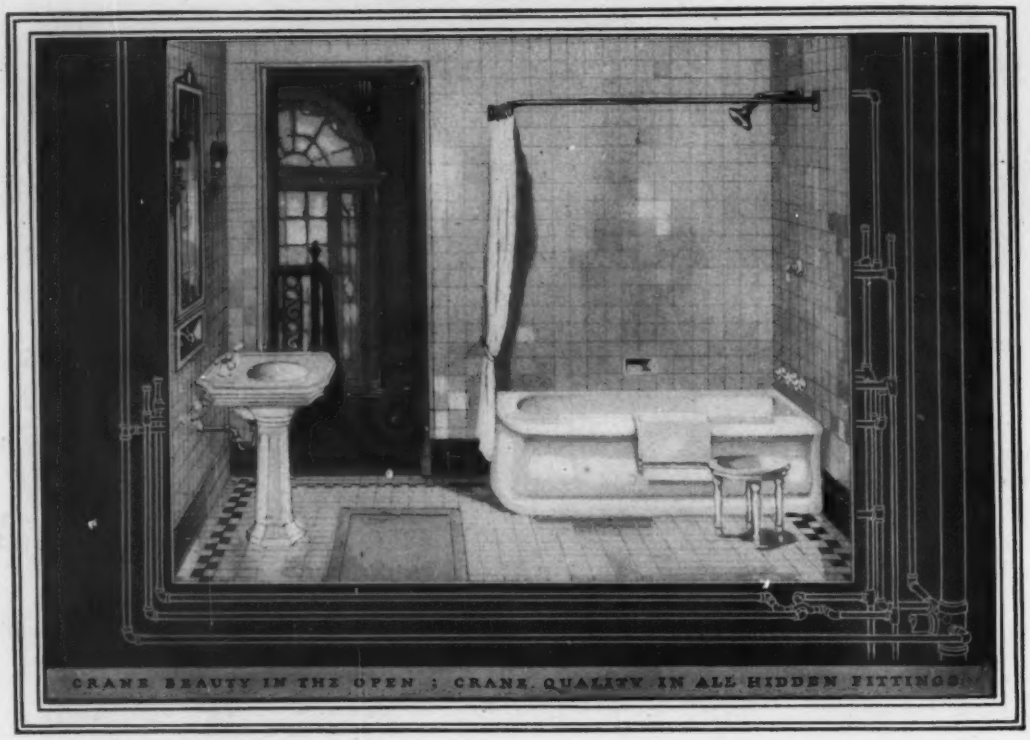
Sold by
Leading Plumbers and Jobbers everywhere.

If you cannot secure locally, ask Seat Department of makers.

(See Modern Hospital Year Book, page 381.)

MADE AND SOLD BY

THE BRUNSWICK-BALKE-COLLENDER CO.
623 SO. WABASH AVE. CHICAGO



The world-wide use of Crane products under varying conditions for upwards of sixty-seven years, is an indication of the universal acceptance and approval of Crane standards of design and quality.

Since 1855, Crane engineers and designers have labored to promote the progress of the various industries and arts which Crane products serve. The Crane name on valves, fittings and piping specialties used in industrial installations, has become the mark of uniform and dependable quality.

This prestige extends to Crane sanitation and heating fixtures for the home. Meeting the needs of smaller dwellings, Crane equipment also satisfies the exacting requirements of great town and country houses, huge apartment buildings and luxurious hotels and clubs.

CRANE

GENERAL OFFICES: CRANE BUILDING, 836 S. MICHIGAN AVE., CHICAGO

Branches and Sales Offices in One Hundred and Thirty-five Cities
National Exhibit Rooms: Chicago, New York, Atlantic City
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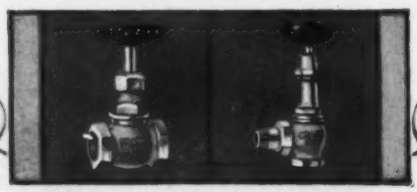
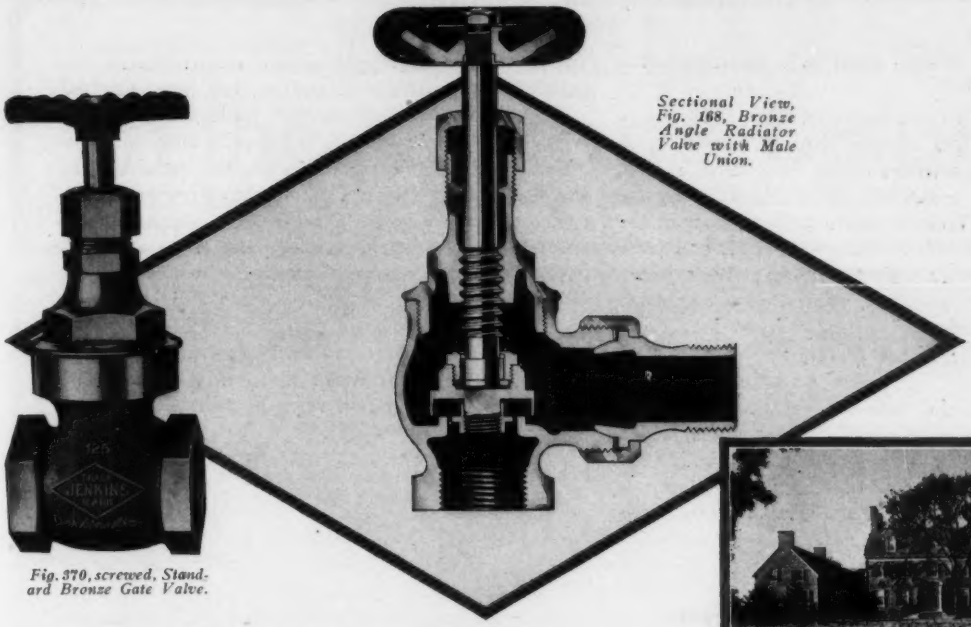


Globe Valve No. 1-B Radiator Valve No. 220



Sectional View, Fig. 168, Bronze Angle Radiator Valve with Male Union.

Fig. 370, screwed, Standard Bronze Gate Valve.

Valves for Homes

The satisfactory operation of heating and plumbing systems depends to a considerable extent upon good valves, and this is especially true in the home, where skilled workmen are not readily available.

Jenkins valves provide ever-dependable service for many years—just the sort of service the home-owner needs and appreciates. They are used in plumbing and heating systems in thousands of homes, a few of which are illustrated.

To provide this *good* valve service, specify "Jenkins."

Valves in bronze, iron and steel for all requirements.

JENKINS BROS.

80 White Street.....New York
524 Atlantic Avenue.....Boston
133 No. Seventh Street.....Philadelphia
646 Washington Boulevard.....Chicago

Residence of T. H. Frothingham, Esq., Far Hills, N. J. Office of John Russel Pope, Architects; Stevenson and Cameron, Contractors; Joseph Miller, Plumbing.

Residence of Arthur C. Shorey, Ardsley-on-Hudson, N. Y. Leigh French, Jr., Architect; John McKeefrey, Inc., Builders.

Residence of Carl L. Hamilton, Esq., St. Paul, Minn. Russell F. Whitehead and John M. Wheeler, Associate Architects; Paul Chapel, Plumber.

Jenkins Valves

SINCE 1864

Manufacturers' Catalogs

THE MASSILLON STEEL JOIST CO., Massillon, Ohio. "Massillon Bar Joists."

The necessity of having fireproof floors in a building of any considerable size, such as a hotel, office structure, apartment house, hospital or school, has ceased to be a subject for discussion, and the question today is how to secure the best floor at the least cost. The solution of the problem is of course quite likely to involve the use of steel floor joists, which can be made of any desired dimensions, of strength calculated to bear any floor load, and adapted to any one of the several methods of floor construction.

Considerable useful data and much information of a valuable sort are given in this brochure, which is devoted to the "Massillon Bar Joist." This joist is being made with a view of effecting economy in every possible way which does not involve any sacrifice of quality or value. Thus there is economy of material used; economy of hours of labor, either at the plant in making the joist or at the site in erecting it; saving in transportation costs on merchandise which is necessarily of great weight, but perhaps more important still, economy which takes the form of so designing floor joists that efficiency of design substitutes for sheer bulk or quantity of steel, thus making for greater economy of cubage within the structure. Almost as important as the data and the other information given in this brochure are the numerous illustrations showing structures at various stages of erection and affording an excellent idea of what constitutes the best present-day practice.

THE KAESTNER & HECHT COMPANY, Chicago. "Bulletin No. 500, Electric Traction Elevators."

It is popularly supposed that the erection of the tall modern building is due entirely to the discovery of the system of steel construction by which the actual weight of a building is supported by a framework or skeleton of steel; but this method of building could never have become as valuable as it has proved had it not been for the almost simultaneous development of the possibilities presented by the elevator. Imagine, for example, the use in a 40- or 50-story structure of the elevators in vogue 25 years ago—elevators which were thought to be of inestimable value in that they made it unnecessary to walk up!

The improvement of the elevator is due very largely to the application to it of electricity as motive power. The use of electricity makes for speed and smoothness of operation; for economy in administering elevator service; for cleanliness, order and other highly desirable qualities, and the elevator has now been brought to a point so closely approaching perfection that much further improvement seems to be impossible. Perhaps like the manufacture of automobiles the making of elevators has been so developed that further radical changes are hardly to be expected, and that only minor changes and further refinement and small improvements are possible. The utmost in service has been reached.

This brochure and various folders and leaflets which come enclosed with it go quite fully into discussing the electric traction elevators furnished by the Kaestner & Hecht Co. Architects who are interested in elevator installation are likely to be well informed as to their operation, and those who actually install elevator equipment are without doubt quite familiar with methods of installation, but both architects and installation men will be able to gather much data of value from these well-presented publications, and they contain many illustrations and considerable information regarding installations.

THE KERNER INCINERATOR CO., Milwaukee. "The Sanitary Elimination of Household Waste." "Sanitary Disposal of Waste in Hospitals."

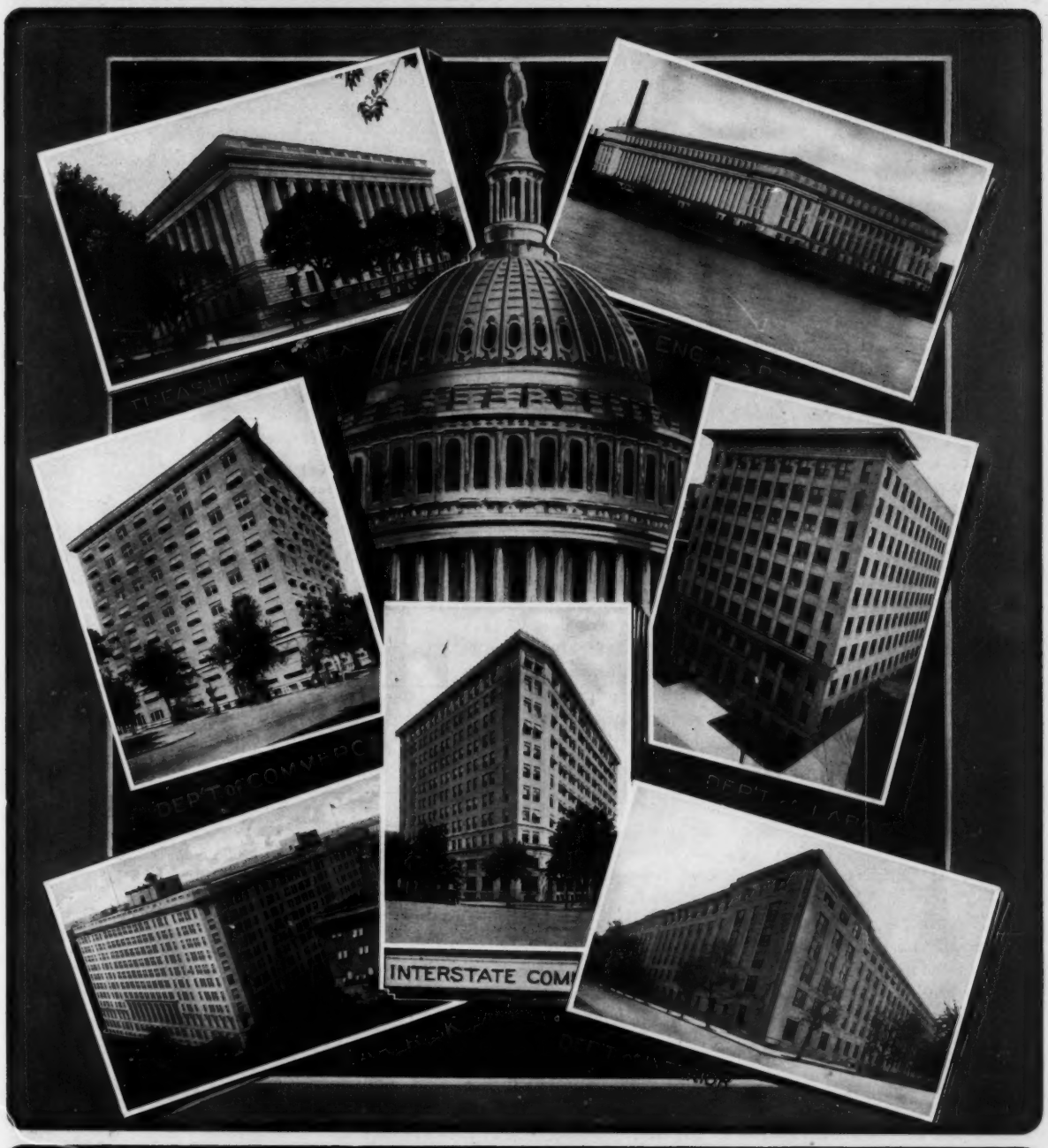
There is no detail connected with the sanitation which is of such importance today as the proper disposal of garbage. In a large city, of course, solution of the problem is undertaken by the municipality, which gathers garbage each day and disposes of it generally by burning it in furnaces which are maintained by the city. Such an easy solution of the individual housekeeper's problem, however, is not possible except in a city or large town, and even when it is it involves the keeping of offensive and highly unsanitary cans, and garbage collectors have been known to fail to make their appointed rounds. Anyone who has lived in New York through a "strike" of garbage collectors during the heat of summer and, since there are no alleys, seen uncovered cans of garbage a week old piled on the sidewalk in front of the house, would realize that a municipality's tackling of the problem is not always a success. Better by far some solution by which the householder is independent of such service in connection with the disposal of garbage.

These folders describe the well known "Kernerator," a device for garbage disposal which is economical and convenient and which is being installed in many buildings of a residence or semi-residence character. In a residence or apartment, for example, there is but one handling of garbage of any kind; all that is seen in the kitchen, pantry or rear hall is the door of the hopper through which garbage is dropped by means of a chute (built in part of an enlarged chimney) into the incinerator, which is provided with a special arrangement of grates and flues so that the garbage is easily and quickly burned. By a special arrangement of grates, oxygen is fed to the flames at the top of the burning material, and so the fire is always on top of the material being incinerated. As the heat liberates gases from the material underneath, these gases pass up through the flames, are mixed with the plentiful supply of heated oxygen at that point, and are consumed. There is always a strong draft into a chimney from the building. When a hopper door in the kitchen

DOUGLAS
PLUMBING FIXTURES

In the Nation's Capitol

HUNDREDS OF U.S. GOVERNMENT BUILDINGS THROUGHOUT THE LAND ARE EQUIPPED WITH DOUGLAS FIXTURES



THE JOHN DOUGLAS CO.
MANUFACTURERS OF HIGH GRADE PLUMBING FIXTURES
GENERAL OFFICE—CINCINNATI O.

Manufacturers' Catalogs

is opened, there is a strong pull of air into the flue from the kitchen. There is never a possibility of heat or smoke escaping into the kitchen, since the suction of the draft prevents that.

If the utmost care is desirable in handling refuse from the kitchen of the house, of what vital importance is the disposal of refuse of many kinds from the different departments of a hospital! A hospital, of course, presents problems not always met when a "Kernerator" system is installed in a house or apartment building, and there are special forms of the "Kernerator" for such institutions.

THE COMPOUND AND PYRONO DOOR CO., St. Joseph, Mich. "Architects' Hand Book."

The precautions against the spread of fire which are taken when an important structure of almost any kind is built quite naturally make considerable provision for fireproof doors, which are necessary for controlling entrances or exits through which fire might easily spread, and the purpose of this handbook is to place before architects, builders and others interested the advantages to be secured by using the fireproof doors, trim, and other details of Pyrono manufacture.

The Pyrono process is a well known mechanical method of fireproofing wood cores in the manufacture of interior finish. Cores are first covered with a fireproof sheathing made of pure asbestos, which by heavy pressure at numerous points, is indented into the core wood. The fireproof sheathing in permanent contact with the core excludes oxygen essential to combustion, preventing ignition, and at the same time permitting, through small openings at the base of the indents, the escape of gases developed from the core wood under high temperatures. Over the indented asbestos sheathing are laid wood veneers, which in gluing are brought into direct contact with the core through the indents.

Pyrono doors and trim are installed by carpenters, and hardware is applied just as for wood doors. The same treatment in finish is also obtained. Pyrono should therefore be included in the specifications for carpenter work.

FEDERAL CEMENT TILE CO., 11 South Dearborn Street, Chicago. "Covered with Federal."

The great cost of present-day building renders it especially necessary that the structure be fully protected by its roof from injury or deterioration of every kind, and economy of administration requires that this protection be secured with as small as possible an expense for "upkeep." One phase of a roof's durability concerns, of course, its absolute fireproofness, and if all these numerous advantages can be had, and if at the same time in addition the roof can be made to admit light and thus function as a skylight, it would seem that there is but little more which could be asked for. This brochure describes two of the roofing materials made by this manufacturing concern, the "Federal Interlocking Tile," a form of stone-concrete roofing, and the "Federal Glass Tile," of which a roof may be built wholly or in part.

Neither heat, cold, fire nor water can affect this Federal Interlocking Tile. Gases, so destructive to some other roofs, only tend to harden it. Reinforcing wire mesh is so deeply imbedded in specially prepared concrete that it is absolutely immune to corrosion. The unit system, with its interlocking joints, makes every slab free to move as a result of vibration, expansion and contraction; yet joints are at the same time hermetically sealed, eliminating the need for the waterproof composition covering and painting required by certain other types of roofing.

Daylight has no rival—and there is no way of introducing daylight into a shop or factory that can compare with toplighting through the roof surface. This ideal lighting is accomplished by Federal Glass Tile. These tile interlock with the remainder of the tile forming the roof, and can be so distributed as to admit light either diffused over large spaces or concentrated on any exacting operation. In each glass tile is imbedded a pane of quarter-inch wire glass, measuring 21x35 inches. A special process provides for expansion and contraction. There are no puttied joints to fail or metal frames to rust out.

THE NORTHWESTERN EXPANDED METAL CO., Chicago. "Specifications for Metal Lath Construction." "Fireproof Construction." "Designing Data."

These three helpful brochures have to do, as their titles suggest, with different phases of the rapidly increasing use of metal lath. The first mentioned booklet is valuable since it gives the specifications recommended for use by the American Specification Institute and the Associated Metal Lath Manufac-

COPY OF THE FORUM WANTED

KIRKHAM & PARLETT, Architects, Carr Building, Springfield, Massachusetts, will be glad to pay $2 for a copy of *The Architectural Forum* for August, 1919, in good condition.

SALESMAN WANTED

A live, pleasing representative, acquainted with and to call on the larger architects and contractors, introducing live specialties. Give experience, previous employer, age, etc., in first letter.

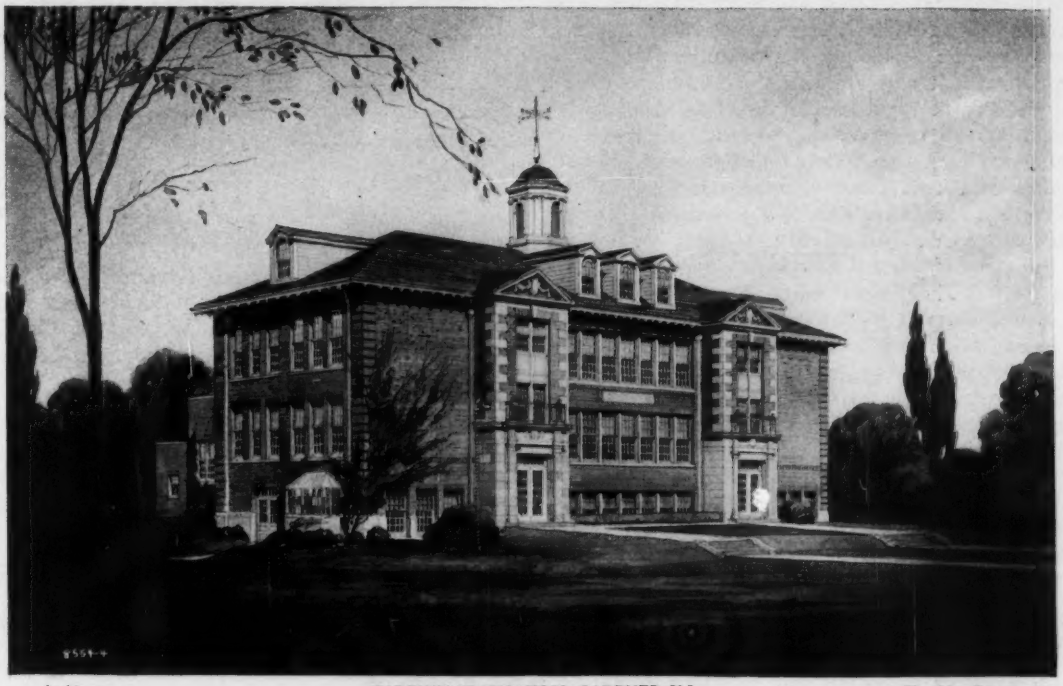
THE KLEIN MANUFACTURING CO.
Perry Payne Building CLEVELAND

VAN RENSSELAER P. SAXE, C.E.

Consulting Engineer

STRUCTURAL STEEL
CONCRETE CONSTRUCTION

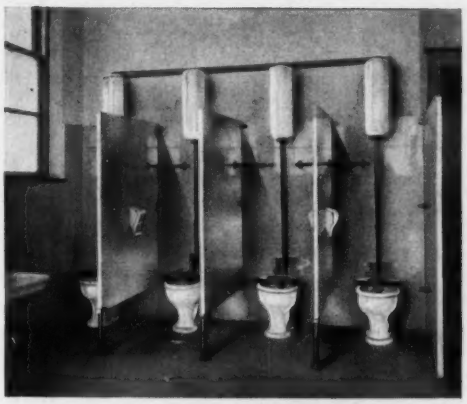
Knickerbocker Building Baltimore



Architect
A. L. PILLSBURY
Bloomington, Ill.

GARDNER HIGH SCHOOL, GARDNER, ILL.

Plumbing Contractors
WALSH & SLATTERY
Peoria, Ill.



BOYS' TOILET ROOM, CLEVELAND TECHNICAL HIGH SCHOOL
Equipped with Clow's Cymric M-1810 Automatic Closets
(Madden's Patent)

It makes not the slightest difference, in quality of work, whether it be a "big job" or a "little job." The one thing that our men bear in mind is that it is a "Clow job."

Clow never disposes of "seconds." There is only one standard of Clow quality.

The smaller the institution, the less it can afford to take risks. "Clow throughout" means safety.

JAMES B. CLOW & SONS
General Offices
534-546 S. FRANKLIN STREET, CHICAGO
Sales offices in principal cities

CLOW

turers which, it is hoped will make for unity in the use of the material. These recommended specifications are the net result of many months spent in investigating the specifications of leading architects, of much inspection of actual construction in various parts of the country, of research into scores of building codes, and of data compiled from questionnaires sent to representative contractors, all this being in addition to the recommendations heretofore put out by individual manufacturers.

In using metal lath it is highly important that it be used in the proper way. These recommended specifications will go far toward securing such use, and to further aid in obtaining proper construction this company issues a brochure upon the subject so fully illustrated that it would seem to be almost impossible to err. The illustrations include diagrams, and sections of every part of a building, explain the best methods of construction; certain chapters deal with foundations, framing, wood studs and joists, partitions, fire stopping and so on, and a considerable part of the brochure is devoted to the stucco of various textures used over metal lathing.

To aid in proper construction the Northwestern Expanded Metal Co. issues still another booklet, which deals with proper design and which is replete with diagrams, tables and data in other forms.

ANNOUNCEMENTS

J. C. Niemeyer, Architect, announces his removal to new offices at 107 East Third street, St. Paul.

John Graham, Architect, announces the removal of his offices to the Dexter Horton Building, Seattle.

Glenn Allen, Architect, announces his removal to the Union Block, 41 South Sutter street, Stockton, Cal. Manufacturers' catalogs are desired.

R. J. Martin announces the opening of his office for the practice of general building design and erection, specializing in reinforced concrete, at Fairbanks Bldg., Springfield, Ohio.

David A. Ogilvie, Architect, formerly identified with the office of Reginald D. Johnson, Architect, announces that he has established an office at 100 East Colorado street, Pasadena.

Samuel Lewis Malkind and Martyn N. Weinstein, Architects, announce their removal from 16 to 105 Court street, Brooklyn. Manufacturers' catalogs and samples are requested.

E. G. and C. J. Kaltenbach announce the opening of their office at 201 Board of Trade Bldg., Wheeling, W. Va., for the practice of civil and architectural engineering. Manufacturers' catalogs and samples are requested.

Hallam L. Movius, Landscape Architect, announces that he has established his Boston office at 11 Beacon street.

Morris W. Maloney, Architect, has removed from 145 Chestnut street to 23 Pearl street, Springfield, Mass. Manufacturers' catalogs are requested.

Leslie H. Allen has become associated as partner and business manager with Russell Barr Williamson, Architect, 405 Broadway, Milwaukee.

Hoener, Baum & Froese, Architects and Engineers, announce the removal of their offices from 1519 Federal Reserve Building, to the Grand-Laclede Building, Grand boulevard and Laclede avenue, St. Louis.

Saul E. Moffie, structural engineer, is now associated with Max Maltzman, architect, under the firm name of Maltzman & Moffie, Architects and Engineers, 51 Cornhill, Boston. Manufacturers' catalogs and samples requested.

George Herbert Gray, successor to L. W. Robinson, of New Haven, and Clark J. Lawrence, of New York, announce the formation of the partnership of Gray & Lawrence for the practice of architecture and community planning at 42 Church street, New Haven.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, OF THE ARCHITECTURAL FORUM, Published Monthly at New York, N. Y., for October 1, 1923.

State of Massachusetts, County of Suffolk, ss.:

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared Albert J. MacDonald, who, having been duly sworn according to law, deposes and says that he is the editor of THE ARCHITECTURAL FORUM and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager, are:
Publisher—Rogers & Manson Co., 383 Madison Avenue, New York, N. Y.
Editor—Albert J. MacDonald, Holbrook, Mass.
Managing Editor—None.
Business Manager—Robert Sweet, Melrose, Mass.

2. That the owners are:
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3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

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ALBERT J. MAC DONALD,
Editor.

Sworn to and subscribed before me this 5th day of October, 1923.
(Seal) ROBERT SWEET,
(My commission expires February 21, 1930) Notary Public.

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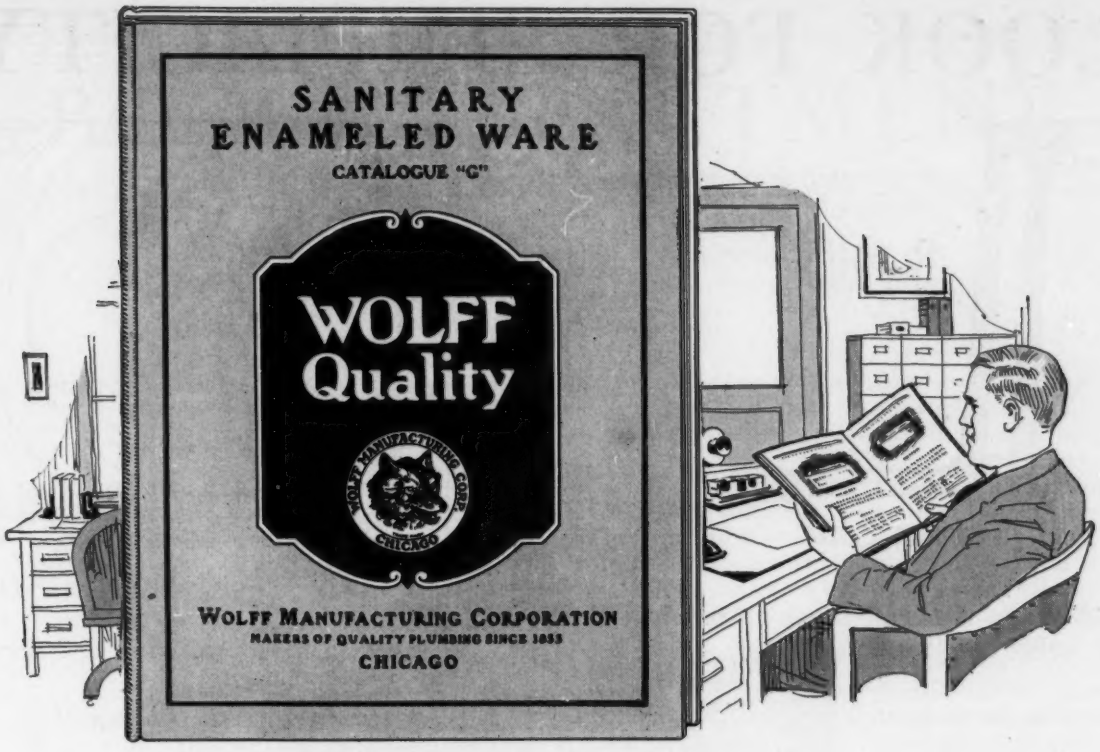

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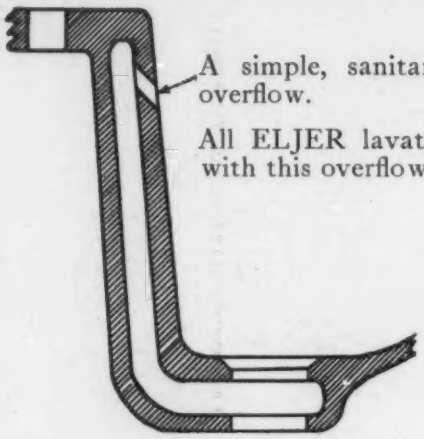

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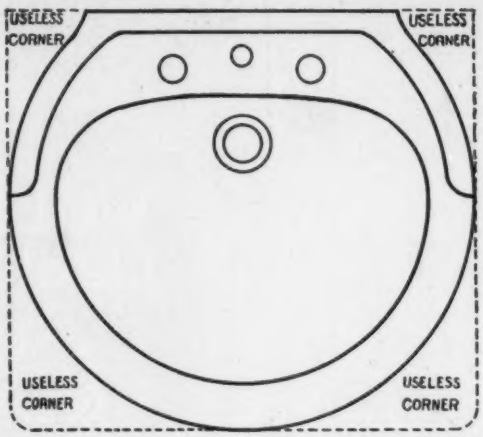

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ROMANESQUE SCULPTURE OF THE PILGRIMAGE ROADS. By Arthur Kingsley Porter. Ten volumes; one volume of text and nine of half-tone illustrations. 6½ x 9 ins. Price $150 net. Marshall Jones Company, 212 Summer street, Boston.

THE decay, during the tenth century, of the civilization fostered by Charlemagne and the general reign of social disorder throughout Europe led to a dread of the approach of the year 1000, the millennium, when mankind looked for the end of the world, and there came a return of hope and a renewal of building energy when the dreaded day had passed. Raoul Glaber, a monk of Cluny, has left an account of the revival of architecture after the year 1000. The whole world, he says, as with one accord seemed to cast aside its tatters of age and to clothe itself in a white mantle of churches.

About the beginning of the eleventh century there spread throughout western Europe the art movement which is generally called Romanesque, which held sway for about a century and a half and had reached its period of culmination when about the middle of the twelfth century it gave way to the movement which we know as Gothic. Although other terms have been used in referring to the movement, the term "Romanesque" seems to be particularly appropriate since it implies in matters relating to art and architecture much as does the term "Romance" when applied to movements having to do with language and literature; the period was a time when the provinces which had constituted the crumbling Empire of the West were taking on something akin to their modern forms and were establishing themselves as states, all having a common Roman origin.

Rome gave to western Europe the basilica plan which Christianity had taken over from pagan antiquity, and upon this plan Europe for centuries continued to build its churches as oblong halls with small apses at the ends. The hall or nave consisted of a central vessel with side aisles divided therefrom by piers. The arrangement of the plan, the vaulting, and the method of laying stone were Roman, but Byzantine influences were powerful in matters of ornament and design. It is not always easy to realize how powerful an effect upon European art flowed for centuries in a never-ending stream from Byzantium. New Rome was preoccupied with affairs of her own and exerted but small influence over the political fortunes of the West, but placed midway between Europe and Asia and filled with the mystery and splendor which were part of her dower, Byzantium poured over all of western Europe her potent influence upon art forms, and especially upon forms of architecture and of sculpture which was regarded chiefly in its relation to architecture. The influence of the East upon the art of western Europe was strong in directing the progress of the Romanesque movement in Italy, Germany and Britain, and particularly in Spain and what are now the southern provinces of France, and among the most precious of the treasures which former ages have bequeathed to the modern world are the Romanesque sculptures of southern and western France and northern Spain. Surprisingly rich is the bequest, for the extent of the work in sculpture in this rich region was so vast that even after allowing for the ravages of centuries the splendor of the legacy is almost beyond the bounds of the imagination.

"Adoration of the Magi"
La Charite-sur-Loire, Nievre
Illustration from "Romanesque Sculpture of The Pilgrimage Roads"

What are called the "pilgrimage roads" lead from southern France by divers passes through the Pyrenees to the shrine of St. James at Compostello. The fame of the shrine and the miracles wrought at the tomb of the apostle attracted thither a vast throng of pilgrims during the eleventh and twelfth centuries, so that the roads were well traveled by a continually passing stream of pilgrims going or coming. One effect of this unceasing pilgrimage was the upbuilding along the way of prosperous cities and towns filled with countless cathedrals, churches and abbeys, built by the generosity of the pilgrim throngs and adorned in accordance with the fashion of the day. In this decoration sculpture played a leading part. The portals and often the entire facade of a Romanesque church were masses of sculpture, the richness centering about the actual doorway where a tympanum would usually show Christ in Glory, with a statue of the Virgin and Child placed upon the trumeau which divided the doorway, while at the sides and within the jamb would be placed single figures standing in

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In excellent half-tone plates, chiefly of full page size, there are illustrated different rooms of late Georgian houses,—halls, living rooms, libraries and dining rooms, and such details of interiors as mantels, door and window frames, stairways, columns and pilasters, and ornament in relief upon walls and ceilings. **An invaluable detail of the work is the inclusion of drawings from which many of these details can be reproduced.**

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canopied niches. Within the church there would be more carved portals, carved capitals and niches, and often carved screens about the choir and elsewhere, all wrought with the highest skill of the craftsmen and influenced in no small measure by the carved Byzantine ivories which were treasured all over Europe.

In this magnificent work Mr. Porter makes to archæology a contribution of the greatest value and importance. With the careful scholarship and discriminating judgment which characterize his earlier writings he has journeyed over the pilgrimage roads, some of which are not much traveled today, and has studied the remains which have come down to us. The magnitude of this task can hardly be appreciated until one examines the 1,527 plates the work contains, and remembers that most of the sculptures were necessarily photographed by the author himself. The result of years of travel and effort is to place before the student a complete survey of the sculpture of this great epoch, together with the author's notes regarding them, the probable dates of their origin, and as much of their history as can be gathered. In addition to the study of the sculpture of the Romanesque period which the work makes possible it aids greatly in the study of the sculpture of the Gothic era which was soon to arise.

VENTILATION. Report of the New York State Commission on Ventilation. Prepared under direction of the Commission, C.-E. A. Winslow, Chairman. 620 pp., 6¾ x 10 ins. Price $15. E. P. Dutton & Co., New York.

RESEARCH in many fields of activity has demonstrated the effect of atmospheric conditions upon occupants of schools, hospitals, factories, theaters and other places in which numbers of people congregate, and it has invariably been found that mental alertness, no less than physical comfort, depends upon the condition of the air as well as upon the prevailing temperatures. As far as we know, however, there has been no effort to collate upon an adequate scale the results of these different studies and experiments, and still less a definite attempt to draw from these results any data which would render the studies productive of improvements in working conditions. This important work has at length been undertaken by a commission appointed by the governor of the state of New York at the request of the New York Association for Improving the Condition of the Poor, and supported by the Milbank Memorial Fund, established and endowed by Mrs. Elizabeth Milbank Anderson.

The publication of this work places on record the findings of investigations which have been careful and minute. The aim has been apparently to make an exhaustive study which should also be of sufficient breadth and scope to render it applicable to buildings of many kinds while paying chief attention to schools, perhaps because they present as a rule the most definitely defined field of study. After giving a review or survey of such studies of this subject as are known, an account is presented of the methods and plans used in the present investigations; a careful description, made plain by many diagrams and figures, conveys an idea of the manner in which this commission's experiments were made, and the remainder of the good sized volume is filled with the results of its researches.

The headings of some of the many chapters will serve to indicate the field which the work covers: Effect of Air Conditions on Body Temperature; Observations

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on Respiration and Metabolism; Influence of Chemically Vitiated Air; Influence of Air Conditions on Performance of Physical and Mental Work; Effect of Dryness on Neuro-Muscular Responses; Immunity against Infection; Physical Factors Affecting Loss of Heat: Window and Fan Ventilation; Ventilation and Respiratory Disease; Air Distribution in Schoolrooms; Washing and Humidifying of Schoolroom Air; Use of Recirculated Air. The subject of ventilation is of increasingly great importance to architects and engineers; like the subject of acoustics it is so important that the success of buildings of certain types depends upon the skill with which its problems are solved. Both ventilating and acoustics are subjects which until lately were but partially understood, but both have been given considerable study so that now it is possible to provide buildings in which ventilating and acoustic properties are of a high order.

SMALL HOUSES OF THE LATE GEORGIAN PERIOD, 1750 to 1820. Volume II, Details and Interiors. By Stanley C. Ramsey and J. D. M. Harvey. 19 pages of text, 100 plates, 8½ x 12½ ins. Price $10. William Helburn, Inc., New York.

PERHAPS it is due to the wholesale destruction of London's old residence quarters, its venerable parks, crescents, squares and places, rumors of the dismantling of which reach America, that there is growing appreciation of the rapidly vanishing architecture of the eighteenth century, together with efforts to put into permanent form records of much of the work. With Devonshire House eking out a precarious existence, Hamilton Palace dismantled, and Stowe House being remodeled into a public school, there is evident a need for recording of this data if there is not to be complete obliteration of even the memory of much of the architecture which made the Georgian period notable.

The favor with which the eighteenth century regarded its architectural forms was based upon the same foundation which secures the use of the identical forms today,—dignity and simplicity, to which were added architectural value and coherence. This old work well expresses the character of the English—a presenting to the world of a well mannered, dignified exterior, occasionally a trifle monotonous, but always accompanied by qualities which redeemed monotony or at least made it appear to be well balanced form. But once acquaintance was made, and the house entered, there were discovered a host of delightfully winning characteristics which made bright, sunny and often lovable what seemed at first a trifle austere.

This volume completes the authors' presentation of small houses built during the latter half of the eighteenth and the early part of the nineteenth centuries. Volume I dealt with exteriors, while the present volume treats of interiors of the period and gives drawings from which there could be reproduced many of the details of interior architecture which added to their interest and beauty. Besides the excellence of their planning the architects of the time were notably successful in their designs for gracefully detailed woodwork—mantels, stairways, wainscots, door and window trim, and the columns and pilasters which they understood so well how to use, in addition to such details of ironwork as fanlights above doorways and guards at the sides of staircases, and such plaster details as modeled friezes and ceilings, and this volume includes countless drawings which will be of practical aid to modern architects.

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There is satisfaction in *working with* good hardware. Carpenters do a better job with Corbin hardware. Give them poor butts and the doors will be hung any old way. Give them poor locks and the escutcheons will probably go on crooked. Give them inferior window fastenings and your client will soon be wondering why all the windows rattle.

The painter, too, respects good hardware. He'll try not to get any paint on those gleaming brass butts or on a beautiful escutcheon.

"A workman is known by his tools"—true! But his workmanship depends a great deal on what he is given to work with. *If you want good workmanship, specify good hardware.*

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The American Hardware Corporation, Successor

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Houses built of clapboards, in the manner which has always obtained in America, are not numerous in England, where stone or brick are of almost universal use, but of clapboard houses there are a few, and this work gives a number of interesting examples together with details of ornament drawn to what the eighteenth century architects evidently considered the proper scale for use where ornament generally worked out in stone or marble was made of wood.

HANDBOOK FOR ARCHITECTS AND BUILDERS. Published under the auspices of the Illinois Society of Architects.

OF goodly size and of broad scope is the 25th edition of the Handbook. In this annual publication there is presented a resume or summing up of architecture and building in Illinois, but while the value and interest of the work are always great, the interest and value are this year intensified.

For many months the office of Chicago's corporation counsel has been in collaboration with a special committee of the city council and with representatives of various organizations and interest in a revision of the code of the City of Chicago, which includes the city's building ordinance. Countless necessary changes were made; the sections relating to the fire prevention bureau and the health department have been taken out and placed in the provisions regulating those activities. Ordinances heretofore known as "special ordinances" have been placed in sections where they properly belong. All these changes have necessitated a complete change in the section numbers of the code, and a far more complete and comprehensive building ordinance is the result. The index to this revised ordinance as necessarily rearranged is published in the Handbook, and since it will be some months before it will be printed and issued by the city, the index as here presented constitutes the sole guidance to those who should use it. Other information adds to the value of this work. Besides data relating to the Illinois Society of Architects, naturally included in its annual publication, such as the condensed history of the organization, a review of its "Canons of Professional Ethics" and the "Schedule of Charges" which the society adheres to, there are data relating to the local chapter of the A. I. A., the Chicago Architectural Club, the Building Construction Employers' Association and the Associated Builders.

A considerable part of the value of this annual volume consists in its presenting in concise form information which architects require but which is usually to be had only by looking it up from many sources. This year the Handbook contains in full the "Illinois Architectural Act" (licensing law); "Extracts from the New Civil Administration Code of Illinois;" "Office Practice" adopted by Illinois Society of Architects; "Suggestions for Firms Issuing Catalogs and Printed Matter;" "Wage Scales as Affected by the Landis Decision;" "Mechanics Lien Law;" "State Zoning Law," and many other details of importance to those for whose use the work is issued. The Handbook for Architects and Builders is delivered free of charge to offices of all architects licensed to practice architecture within the limits of the state of Illinois.

THE DAVANZATI PALACE, FLORENCE

A Restored Palace of the XIV Century, Measured and Drawn, Together with Short Descriptive Text, by
LOUIS CONRAD ROSENBERG

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